Airports Commission

Review of Destination Labels used in DfT Aviation Model

16 August 2013

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Scope

As part of PwC's support on analysis and strategy to the Airports Commission, we were asked to update the destinations list used within a selection of the long haul destination zones in the current DfT Aviation Model. This includes adjusting the allocation of traffic between airports within each zone, for a 2040 scenario with the updated destinations. No traffic forecasting or modelling was completed in development of the new lists, in line with the Commission's wishes. This paper describes the process by which the new destination lists were developed, the analysis completed in development of the new lists, and the new lists themselves along with a rationale for the destinations included. Our scope of work did not include assessment of the model's parameters, functionality, or interactions of destination zones with other aspects of the model, and provides no comment on these.

1. Introduction

1.1. Background

The Airports Commission is tasked with identifying the requirement for additional UK airport capacity over the short, medium, and long term. PwC has been appointed as the analytical and strategic advisor to the Commission in order to support its decision making process.

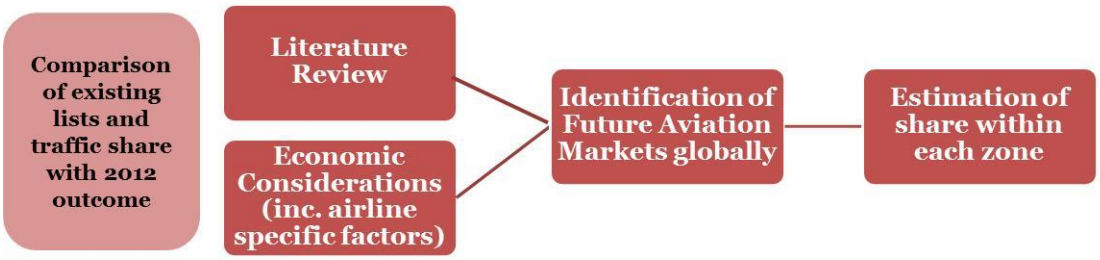
The Commission is using an econometric model provided by the DfT to predict future demand for air services and guide its recommendations for future capacity requirements in the UK. This model utilises a number of inputs to identify demand for air services over the long term.

PwC undertook a review of a selection of the long haul destination zones with a view to updating the destinations within each zone for a 2040 scenario. In addition we have adjusted the allocation of passenger traffic between airports within each zone, again for a 2040 scenario. No traffic forecasting or modelling was completed in the development of the new lists, in line with the Commission's wishes.

This paper describes the process by which the new destination lists were developed, the analysis completed in development of the new lists, and the new lists themselves, along with an explanation for the destinations included.

1.2. Approach

The figure below describes the approach taken to develop the new lists of destinations and the allocations of traffic to each destination:



The first activity completed was a comparison of the existing lists used within the DfT model with 2012 outturn, drawing on data within the SABRE database. Total passenger traffic between the UK and the various destinations under consideration was analysed to identify the proportion of the zone's traffic travelling to the destination in question. Further details can be found in Section 2.

Building upon the first activity a literature review was conducted to identify pertinent trends and likely future scenarios for economic growth over the next 30 years. This literature review was not constrained to purely aviation related material, but included more general economic papers. The aim of the literature review was to identify those regions and cities that were likely to be of economic significance in 2040.In parallel to this, the team's subject matter experts met regularly to discuss pertinent aspects of the aviation industry and business that may affect how airports and airlines develop to 2040.

Through combining the outputs of the literature review and the understanding of the subject matter experts, the list of significant global locations (in economic terms) was reduced to cover only those locations that would be likely to have UK air traffic. Such considerations included identifying which airport UK traffic would connect to if a city had more than one option; the capabilities of aircraft over the next 30 years; how airlines choose to introduce new routes; etc.

With a list of airport destinations identified, traffic was allocated across the airports based upon data drawn from the literature review and the opinions of the subject matter experts. Key inputs into the decision making process included the current splits of traffic across destinations (drawn from SABRE), predictions of population, GDP, and connectivity as well as other data sources.

The following characteristics of the DfT model are noted:

- **Number of destinations**: long-haul destinations within the model are assigned to zones which have a limit of 20 destinations. Therefore, the lists developed through our analysis only show a maximum of 20 destinations;

- **Passenger hubbing:** when traffic travels via a hub in the model, it is allocated differently depending on the hub used. Four hubs (FRA, CDG, DXB, AMS) are included in the functioning of the model and traffic travelling via these hubs to a destination, is allocated to the destination. Traffic travelling via an unmodelled hub is allocated to the hub itself, rather than the destination (although if the hub is in a different zone to the ultimate destination the passenger is correctly allocated to the destination). To accommodate the assumptions made by the model, in our development of potential future destinations we have considered the routing that passengers may take and allocated traffic accordingly; and

- **Scheduled, Low Cost and Charter traffic:** when calculating demand, the model has a different group of inputs for each zone for low cost, charter, and scheduled traffic. As a result, every long haul zone has a different set of airport destinations for traffic that is low cost, scheduled, and charter. It should be noted that the scope of this report is scheduled full service traffic only.

1.2.1. Business vs Leisure traffic

International tourist arrivals passed the 1bn mark in 2012, a milestone for the significance of leisure travel and its steady growth over the last 50 years. Statistics published by the World Tourism Organisation (UNWTO) show that in 2012 52% of tourist arrivals were for 'holiday, recreation or types of leisure' and a further 27% were for visiting friends and relatives, pilgrimages, health treatment, etc., whilst only 14% were travelling for business or professional reasons[1]. As such, leisure traffic represents a significant proportion of total traffic worldwide. The consideration of this paper of purely long haul destination zones (the East Europe zone is one exception) further increases the importance of leisure traffic as for many of the destination zones under consideration, air travel is the only feasible mechanism of travel.

In our analysis we have considered both business and leisure traffic to ensure both are adequately represented in the model. The analysis has not separated business and leisure traffic, but we have included a variety of data sources in our literature review that relate to both business and leisure traffic demand. In addition to utilising data that are likely to be directly linked to growth in business demand (such as metrics built around the connectivity between service firms) we have included data that are likely to be linked to growth in leisure demand such as GDP and population growth data. Ultimately, many of the drivers of growth for business and leisure air travel are the same.

A full list of the data sources consulted during the analysis is provided below.

[1] Note that these percentages are across all methods of transport – of the total, air travel made up 52% and if only air travel was considered, the proportion of business travel would likely be higher. However data was not available at the time of writing to support this.

1.3. Data Sources

The following data sources were consulted in the development of the updated lists:

Title	Author	Publication Date	Description	Rationale
World in 2050: The BRICs and beyond: prospects, challenges and opportunities	PwC	January 2013	Econometric model of future GDP across the globe including identifying areas of growth and ranking of countries in 2030 and 2050	It provides commentary on GDP distribution across the globe
Which are the largest city economies in the world and how might this change by 2025?	PwC	November 2009	It provides 150 city specific GDP forecasts across the globe comparing the standings in 2008 to 2025 and analysis of the trends	It will provide trends towards the mid-point of the period we are considering for specific cities and inform relative rankings
Urban world: cities and the rise of the consuming class	McKinsey Global Institute	June 2012	Focuses on shift in economic balance from East to South of the world and looks at the move towards urbanisation in emerging markets	It can help inform where urbanisation will be strongest, which in turn could inform key sources of flight demand as middle classes emerge
Loughborough University Globalisation and World Cities Research Network	GaWC	2010	Ranks global cities in terms of the role they play in the global network. Cities are then divided up into groups depending on how connected they are deemed to be. This is measured by service firm interactions such as accountants, law firms, advertising and professional services	It will help to develop and confirm that the lists of cities we have selected are a key part of the global network
Is it time to redefine emerging markets?	Goldman Sachs	January 2011	Studies what Goldman Sachs calls the new "growth markets" beyond the usual BRICs and what role they will play in the global economy in years to come	It will assist in identifying key markets that are likely to experience high growth outside the usual set that have already been studied in much depth such as China
Trading Places: Unlocking export opportunities through better air links to new markets	CBI	March 2013	Historical analysis of the effect of improved air links on trade and investment	It can inform what the trends have been to date in the long-haul zones and help with providing information on airline economics
Global Market Forecast: Navigating the Future	Airbus	2012	Airbus forecasts demand for their products and looks at which markets and cities will be key players in the aviation market from 2012 - 2031	It focuses specifically on airline routes and which cities are likely to be key to each global region

Current Market Outlook	Boeing	2012	Boeing forecasts demand for their products and looks at which markets and cities will be key players in the aviation market from 2012 - 2031	Focuses specifically on airline routes and which cities are likely to be key to each global region
Asia 2050: Realizing the Asian Century	Asian Develop-ment Bank	August 2011	Detailed exploration of potential scenarios around the growth and development of Asia as a region up until 2050	For what is likely to be a zone in which much change is expected, this source will provide valuable insights and data
How Solid are the BRICS?	Goldman Sachs	December 2005	Review of the growth of the BRIC countries in the first years of the 21st Century, along with identification of 11 potential countries to become the next BRIC-equivalent	Whilst an older source, identification of the next countries to see large scale development may guide thinking on airport selection
Looking to 2060: Long-term global growth prospects	OECD	November 2012	Macro-economic growth model for OECD and non-OECD countries to 2060	Covering both the OECD and non OECD countries means this report will be able to provide a broad appreciation of growth over the next 50 years. It is also current and based on 'bottom-up' analysis
Africa in 50 Years' Time	African Develop-ment Bank	September 2011	Provides prediction and commentary of growth across a number of metrics across Africa, divided by region	Accounting for three of the zones in the DfT's model, insight into Africa will be valuable in understanding the spread and distribution of wealth across the continent
The World Order in 2050	Carnegie	April 2010	Provides GDP projections for 19 of the G20 countries and several large countries in Africa	It provides a further data point for GDP growth between now and 2050
Global Economic Prospects	World Bank	June 2013	An up-to-date look at the world economy as it stands today and in the near term	With a focus on current and near term performance, this report will help us to understand the current situation globally
World Economic Outlook	IMF	April 2013	Provides both an overview of the global and regional economic performance over recent years and into the near future	Similarly to the World Bank report, the World Economic Outlook will provide valuable data on recent macroeconomic performance

1.4. Document Structure

The remainder of this document is structured as follows:

- Section 2: provides a comparison of the current destination lists used within the DfT model with 2012 outturn passengers using up-to-date SABRE data;
- Section 3: summarises the outputs of the literature review exploring the potential geographies and destinations that may be of significance in 30 years' time;
- Section 4: provides a discussion of the drivers of growth in the aviation sector specifically, drawing upon the insights of PwC's subject matter experts; and
- Section 5: presents a number of suggested updates to the lists of destinations along with justification for the changes.

2. Baseline Analysis

2.1. Overview

In this section we conduct a baseline analysis by reviewing actual passenger flows to destinations in the DfT's 'long-haul' zones. We do so in order to gain insight into which destinations currently receive the most traffic from UK airports and to reveal any trends that have been developing over the last decade. Furthermore, this analysis allows us to compare the most up to date traffic distributions to destinations with the inputs currently used in the DfT's model. However, it should be noted that a direct comparison of the two data sets cannot be made as a result of the specific functioning of the model which has been incorporated into the DfT's input data. As such, the comparison is used to highlight significant differences which can then be investigated to determine whether the difference has arisen as a result of the functioning of the model (i.e. more traffic has been allocated because the airport is a hub) or because of market changes which would need to be considered in determining the 2040 allocation of traffic.

2.2. Methodology

In order to conduct the analysis, SABRE data on passengers whose origin was any UK airport and whose destination was an airport in any of the DfT's 'long-haul' zones for the years 2002 to 2012 was employed. For the purpose of this analysis, 'long-haul' is defined as any country outside Western Europe. Eastern Europe, which in any other context would be defined as a short-haul destination, is here categorised as long-haul, which is in line with the definition used in the DfT model. For each zone we look at all types of traffic then, in order to be consistent with the assumptions made in the DfT's model, we look at passenger flows for full service carriers only (i.e. excluding low cost and charter carriers). From this analysis we are able to assess the share of traffic any particular destination has within the zone to which it has been allocated.

2.3. Key Findings

The following subsections present the key findings for each of the nine zones we have examined. For each of the zones, the following elements are shown:

- The rankings of the top 20 destinations in the zone, with passenger flows attributable to low cost and charter carriers excluded;
- The rankings of cities as used in the DfT's model currently (shown in red), allowing any differences between the two lists to be identified; and
- An indication of the current distribution of traffic within each zone, as measured by passenger flows in 2012.

It should be noted that for brevity we do not show the trends for each destination over the last ten years, but where any pertinent trends are apparent these are described in the text.

2.3.1. Zone 518 - East Europe

Table 2.1 below presents the current top 20 destinations for the 'East Europe' zone, which covers the Eastern Europe and Central Asian geographical region. Moscow was clearly the most popular destination in 2012, with

traffic being split between the Domodedovo and Sheremetyevo airports. Warsaw also features prominently, which is consistent with the DfT's ordering. The two lists, however, show some differences. Firstly Baku did not feature in the top 20 flows in 2012 but does feature in the DfT's list. Further investigation shows that Baku (GYD) has been attributed to another zone; however, the 2012 PAX numbers to GYD were just under 36,000. Placing this back into the most intuitive zone of East Europe, we can see that it would feature above Tallin and below Ashkabad in terms of 2012 traffic. The DfT current list also includes Baneasa airport in Bucharest, but our analysis showed that only Otopeni airport featured in the top 20 in 2012.

Table 2.1 Zone 518 baseline analysis

Rank	Code	Top 20 list	DfT Current List	PAX 2012	PAX Traffic Splits 2012
1	DME	Moscow (Domodedovo)	Warsaw	217696	23%
2	WAW	Warsaw	Moscow (Domodedovo)	147587	16%
3	SVO	Moscow (Sheremetyevo)	Gdansk	96871	10%
4	OTP	Bucharest (Otopeni)	Katowice	96828	10%
5	KBP	Kiev	Sofia	80935	9%
6	SOF	Sofia	Bucharest (Otopeni)	60980	6%
7	LED	St Petersburg	Kiev (Borispol)	57960	6%
8	ASB	Ashkhabad	Moscow (Sheremetyevo)	44255	5%
9	TLL	Tallin	Bucharest (Baneasa)	20750	2%
10	ALA	Alma Ata	Poznan	20222	2%
11	GDN	Gdansk	Riga	13457	1%
12	MSQ	Minsk	St Petersburg	13294	1%
13	TBS	Tbilisi	Ashkhabad	12959	1%
14	GUW	Guryev	Varna	10679	1%
15	ODS	Odessa	Cluj Napoca	10075	1%
16	KRK	Krakow	Krakow	10014	1%
17	TSE	Akmola	Wroclaw	7942	1%
18	VKO	Moscow Vnukovo	Baku (Heyder Aliyev Int'L)	7674	1%
19	VNO	Vilnius	Timisoara	7618	1%
20	KIV	Kishinev	Vilnius	6948	1%

Source: SABRE, PwC Analysis

Furthermore, Cluj Napoca, Timisoara, Poznan, Riga, Wroclaw, Varna and Katowice fail to appear in the top 20 list based on our 2012 passenger analysis. A key reason for this is the exclusion of LCCs from our assessment, which play a significant role in carrying UK traffic to and from this region, and in particular Poland. If we include all types of traffic, Moscow Domodedovo actually drops to the seventh most popular destination in the zone for 2012, with Krakow featuring in the number one slot (see Appendix B for the full breakdown). Other destinations in Poland such as Gdansk and Katowice also feature in the top 5 when we include LCCs. Their popularity as air routes has risen very sharply since Poland joined the EU in 2004. We also observe similar trends in other countries within this zone after they became EU member states. Thus, restricting attention to full service carriers alters the regional picture substantially, and places more weight on the larger cities as well as those that are a further distance from UK airports.

2.3.2. Zone 519 – West Africa

In West Africa, three destinations take up around 75% of traffic to the region (see table 2.2 below). These are Lagos in Nigeria, Accra in Ghana and Abuja in Nigeria. Lagos in particular has a large share of this zone's traffic, taking over half of the 2012 passengers to the zone. This is exactly consistent with the ordering of the top three destinations currently in place in the DfT's model. However, further down the list, there are some differences. For instance, Abidjan, Douala and Dakar do not feature in the DfT's list despite these destinations being ranked in the top 10 in 2012. Two other key differences are that Port Harcourt, an important oil industry town in Nigeria, which features strongly in our baseline analysis, does not feature in the DfT's list, and also, Boa Vista in the Cape Verde islands features, while Ilha Do Sal (also in the Cape Verde islands), does not.

Table 2.2 Zone 519 baseline analysis

Rank	Code	Top 20 list	DfT Current List	PAX 2012	PAX Traffic Splits 2012
1	LOS	Lagos	Lagos	294740	52%
2	ACC	Accra	Accra	105334	18%
3	ABV	Abuja	Abuja	78867	14%
4	FNA	Freetown	Ilha Do Sal C. Verde	22403	4%
5	PHC	Port Harcourt	Freetown	13423	2%
6	ABJ	Abidjan	Monrovia (Roberts)	7574	1%
7	DLA	Douala	Hassi Messaoud	7499	1%
8	DKR	Dakar	Banjul	6776	1%
9	LBV	Libreville(Leon M'Ba)	Malabo	4545	1%
10	SSG	Malabo Santa Isabel	Bata	4196	1%
11	BVC	Boa Vista (C.Verde)	Praia	3539	1%
12	CKY	Conakry		3444	1%
13	PNR	Pointe Noire		3404	1%
14	ROB	Monrovia (Roberts Int)		3250	1%
15	BJL	Banjul		2858	1%
16	DMS	Unspecified, West Africa		2602	0%
17	NSI	Yaounde Nsimalen International		2460	0%
18	OUA	Ouagadougou		1438	0%
19	BKO	Bamako		1385	0%
20	LFW	Lome		1315	0%

Source: SABRE, PwC Analysis

2.3.3. Zone 520 – East Africa

As can be seen in table 2.3 below, the majority of cities that appear most important in our baseline analysis also feature prominently in the DfT's current list. However, there are two key exceptions to this, Sharm El Sheikh Ophira airport and Hurghada, both of which are located in Egypt. As with East Europe, the reason for these destinations featuring further down our list are that they are predominantly served by LCCs, namely easyJet and Monarch. A second key trend that is revealed from our baseline analysis is that destinations in Tanzania appear more influential than the current DfT list would suggest. Dar Es Salaam, the capital, was the fourth most popular destination in 2012, a reflection of its growth as a medium sized hub, while the other Tanzania destinations of Kilimanjaro and Zanzibar make up around 4% of traffic to the zone.

Table 2.3 Zone 520 baseline analysis

Rank	Code	Top 20 list	DfT Current List	PAX 2012	PAX Traffic Splits 2012
1	CAI	Cairo	Sharm El Sheikh (Ophira)	146728	29%
2	NBO	Nairobi	Cairo	142677	28%
3	EBB	Entebbe	Nairobi	41520	8%
4	DAR	Dar Es Salaam International	Addis Ababa	37806	7%
5	ADD	Addis Ababa	Hurghada	28096	5%
6	KRT	Khartoum	Khartoum	21600	4%
7	SSH	Sharm El Sheikh Ophira	Entebbe	17097	3%
8	MBA	Mombasa Moi International	Dar-Es-Salaam	16294	3%
9	JRO	Kilimanjaro	Luxor	14068	3%
10	SEZ	Mahe Island Seychelles Intl	Seychelles	11663	2%
11	KGL	Kigali Gregoire Kayibanda	Djibouti	7196	1%
12	LXR	Luxor	Taba	6735	1%
13	ZNZ	Zanzibar(Kisauni)	Marsa Alam	5192	1%
14	HBE	Borg El Arab	Mombasa	3421	1%

15	JUB	Juba	3139	1%
16	ASM	Asmara	2989	1%
17	JIB	Djibouti(Ambouli)	2644	1%
18	BBO	Berbera	1825	0%
19	HRG	Hurghada	1736	0%
20	MGQ	Mogadishu	1592	0%

Source: SABRE, PwC Analysis

2.3.4. Zone 521 – South Africa

Overall, for zone 521, the DfT current list appears to match very closely the top destinations as indicated by 2012 passenger traffic. The most notable exclusion, however, is that of Durban, which attracted 5% of all UK travellers to the zone in 2012, despite passenger numbers to Durban having consistently declined over the last decade. The probable reason for this, as set out in section 5, is that UK passengers travelling to Durban are highly likely to hub through Johannesburg, and therefore are attributed to Johannesburg in the DfT model. Two other destinations that both feature with passengers over 10,000 are Lilongwe in Malawi and Port Elizabeth in South Africa. After these destinations, the traffic numbers become very small.

Table 2.4 Zone 521 baseline analysis

Rank	Code	Top 20 list	DfT Current List	PAX 2012	PAX Traffic Splits 2012
1	JNB	Johannesburg	Johannesburg	292577	36%
2	CPT	Cape Town	Cape Town	194152	24%
3	MRU	Mauritius	Mauritius	116220	14%
4	HRE	Harare	Lusaka	42907	5%
5	DUR	Durban	Harare	42528	5%
6	LAD	Luanda	Luanda	31284	4%
7	LUN	Lusaka	Windhoek	21127	3%
8	LLW	Lilongwe		13452	2%
9	PLZ	Port Elizabeth(Hf Verwoer		10932	1%
10	WDH	Windhoek		8310	1%
11	GBE	Gaborone		6237	1%
12	FIH	Kinshasa N'Djili		6194	1%
13	MPM	Maputo		5418	1%
14	TNR	Antananarivo Mg		5353	1%
15	ELS	East London(Ben Schoeman)		3464	0%
16	LVI	Livingstone		3315	0%
17	BLZ	Blantyre(Chileka)		3058	0%
18	GRJ	George,Za		2651	0%
19	MQP	Nelspruit		2052	0%
20	NLA	N'Dola		1917	0%

Source: SABRE, PwC Analysis

2.3.5. Zone 522 – Latin America

The 'Latin America' zone, is a region that has a wide range of destinations, varying from small Caribbean islands to large capital cities. While many of the destinations ranked as being in the top 20 for the region based on 2012 passenger flows are also captured in the DfT's list (see table 2.5 below), there appears to be some inconsistency over the ordering of the importance of destinations (although Bridgetown does appear as the top destination for both).

Rio De Janeiro is placed substantially lower in the current DfT list compared with its ranking in 2012 passenger flows. This would suggest that the importance of Rio as a destination is currently significantly underestimated

in the DfT list, especially as passengers are highly unlikely to hub elsewhere in the region before arriving in Rio. In addition, the DfT's list does not include Cancun in Mexico, a city which features fairly high up in our rankings of destinations based on 2012 passengers and which has been on a rising trend. Cancun is now served by scheduled airlines from the UK, but these services differ only marginally from the charter services to the destination, which however are excluded from both the model and this report.

Table 2.5 Zone 522 baseline analysis

Rank	Code	Top 20 list	DfT Current List	PAX 2012	PAX Traffic Splits 2012
1	BGI	Bridgetown	Bridgetown	176314	15%
2	GIG	Rio De Janeiro (Galeao)	Buenos Aires	104290	9%
3	GRU	Sao Paulo (Guarulhos)	Sao Paulo (Guarulhos)	99841	9%
4	UVF	St Lucia (Hewanorra)	Kingston	90598	8%
5	ANU	Antigua	Mexico City	88465	8%
6	EZE	Buenos Aires(Ezeiza)	Antigua	64847	6%
7	CUN	Cancun	St Lucia (Hewanorra)	63223	6%
8	HAV	Havana	Bermuda	60132	5%
9	MBJ	Montego Bay	Montego Bay	54462	5%
10	MEX	Mexico City	Havana	49449	4%
11	KIN	Kingston	Port Of Spain	48682	4%
12	BDA	Bermuda Kindley Field	Grenada	43168	4%
13	POS	Port Of Spain	Rio De Janeiro (Galeao)	38300	3%
14	LIM	Lima	Grand Cayman	29826	3%
15	BOG	Bogota	Tobago	24797	2%
16	GND	Grenada	Boa Vista (Rabil)	24591	2%
17	SCL	Santiago De Chile	St Kitts	23819	2%
18	NAS	Nassau	Providenciales	17839	2%
19	CCS	Caracas	Punta Cana	17796	2%
20	SJO	San Jose Cr	San Juan (Puerto Rico)	17367	2%

Source: SABRE, PwC Analysis

2.3.6. Zone 523 – Middle East

Our passenger analysis of the Middle East confirmed what might be intuitively expected about the zone, with Dubai dominating in terms of traffic, taking a large 44% of the zone's total passengers in 2012. Overall, the top 20 in our analysis is consistent with the DfT current list, with the order being similar too. The one exception is perhaps Bahrain, which ranked six places lower in our analysis compared to the DfT's current ranking.

Table 2.6 Zone 523 baseline analysis

Rank	Code	Top 20 list	DfT Current List	PAX 2012	PAX Traffic Splits 2012
1	DXB	Dubai	Dubai	826886	44%
2	JED	Jeddah	Doha	133785	7%
3	AUH	Abu Dhabi International	Abu Dhabi International	132995	7%
4	DOH	Doha	Bahrain	107014	6%
5	KWI	Kuwait	Kuwait	104182	6%
6	RUH	Riyadh	Jeddah	95890	5%
7	MCT	Muscat	Imam Khomieni	68052	4%
8	IKA	Imam Khomieni	Muscat	63877	3%
9	BEY	Beirut	Amman	62629	3%
10	BAH	Bahrain	Beirut	57379	3%
11	AMM	Amman Queen Alia Intl	Riyadh	54106	3%

12	GYD	Baku	Dammam	35883	2%
13	KBL	Kabul	Damascus	28182	2%
14	DMM	Dammam	Aleppo	26075	1%
15	EBL	Erbil International	Sanaa	17239	1%
16	BGW	Baghdad Al Muthana	Tehran	13570	1%
17	DAM	Damascus		9688	1%
18	BSR	Basra		9354	1%
19	MED	Madinah Sa		9235	0%
20	ISU	Sulaimaniyah International Airport		8244	0%

Source: SABRE, PwC Analysis

2.3.7. Zone 524 – India

Table 2.7 below shows the results of our baseline analysis for the DfT's 'India' zone, which covers the Indian Subcontinent geographical region. Overall, the destinations that appeared in our analysis correspond well with the current DfT list. However, two destinations that are ordered quite differently are Dacca and Kolkata, with Dacca featuring higher in our baseline by 5 places, while Kolkata appears 7 places lower in the 2012 data compared with the DfT list.

Table 2.7 Zone 524 baseline analysis

Rank	Code	Top 20 list	DfT Current List	PAX 2012	PAX Traffic Splits 2012
1	DEL	Delhi	Mumbai	355136	17%
2	BOM	Mumbai	Delhi	299823	15%
3	ISB	Islamabad	Islamabad	264078	13%
4	CMB	Colombo	Bangalore (Bengaluru)	158616	8%
5	LHE	Lahore	Colombo	133059	6%
6	DAC	Dacca	Lahore	125091	6%
7	BLR	Bangalore	Calcutta (Kolkata)	97206	5%
8	MAA	Madras (Chennai)	Ahmedabad	95412	5%
9	ATQ	Amritsar(Rajah Sansi)	Chennai	82099	4%
10	AMD	Ahmedabad	Hyderabad (Rajiv Ghandi)	77183	4%
11	KHI	Karachi	Dhakha	71948	4%
12	COK	Cochin	Amritsar	68277	3%
13	HYD	Hyderabad(Begumpet)	Karachi	62369	3%
14	CCU	Calcutta (Kolkata)		40489	2%
15	ZYL	Sylhet		38976	2%
16	GOI	Goa		38136	2%
17	TRV	Trivandrum		23510	1%
18	PEW	Peshawar		11018	1%
19	CCJ	Calicut In		7308	0%
20	BHJ	Bhuj		4690	0%

Source: SABRE, PwC Analysis

2.3.8. Zone 525 – Far East

As with the zone above, the 'Far East' zone rankings as they appear currently in the DfT's modelling seem to be similar to the rankings given by our 2012 passenger analysis. There are no clear significant differences in rankings between the two lists; however, there are some selection differences to be addressed. Firstly, Guangzhou in China attracted traffic similar to that of Ho Chi Minh City in 2012 and traffic has been growing rapidly as the city becomes one of the largest in both the region and the world. Also, the DfT current list includes Honolulu (which has been classed as a Far Eastern destination). However, inspection of the passenger

flows to Honolulu reveals that less than 20,000 passengers who originated from the UK travelled there in 2012, meaning that it does not make the top 20 ranking for the region. Lastly, Bandar Seri Begawan, the capital of Brunei, did not feature in the top 20 destinations for 2012.

Table 2.8 Zone 525 baseline analysis

Rank	Code	Top 20 list	DfT Current List	PAX 2012	PAX Traffic Splits 2012
1	HKG	Hong Kong (Chep Lap Kok)	Hong Kong (Chep Lap Kok)	581748	19%
2	BKK	Bangkok	Singapore	438781	14%
3	SIN	Singapore	Tokyo (Narita)	411645	13%
4	NRT	Tokyo (Narita)	Kuala Lumpur (Sepang)	275759	9%
5	PEK	Beijing	Bangkok Suvarnabhumi Airport	229461	7%
6	KUL	Kuala Lumpur Internationa	Beijing	195077	6%
7	PVG	Shaghai Pudong International	Seoul (Incheon)	189545	6%
8	ICN	Soeul Incheon	Shanghai (Pu Dong)	144972	5%
9	MNL	Manila	Taipei	132298	4%
10	MLE	Male International	Bandar Seri Begawan	86108	3%
11	KTM	Kathmandu	Osaka (Kansai)	56835	2%
12	TPE	Taipei	Male International	54296	2%
13	HKT	Phuket	Honolulu	47285	2%
14	KIX	Osaka	Kathmandu	46718	1%
15	HAN	Hanoi	Denpasar Bali	43776	1%
16	CGK	Jakarta (Soekarno-Hatta Intnl)	Jakarta (Soekarno-Hatta Intnl)	43580	1%
17	SGN	Ho Chi Minh City/Saigon	Ho Chi Minh City/Saigon	39324	1%
18	CAN	Guangzhou		38520	1%
19	DPS	Denpasar Bali		35364	1%
20	HND	Tokyo (Haneda)		25225	1%

Source: SABRE, PwC Analysis

2.3.9. Zone 526 – Australasia

Australasia is a relatively simple zone compared to some others given the concentration of destinations. The top 5 destinations in 2012 covered over 85% of passengers to the region.

Table 2.9 Zone 526 baseline analysis

Rank	Code	Top 20 list	DfT Current List	PAX 2012	PAX Traffic Splits 2012
1	SYD	Sydney	Sydney	252087	29%
2	MEL	Melbourne	Melbourne	151109	17%
3	PER	Perth	Auckland International	140499	16%
4	BNE	Brisbane	Brisbane	108368	12%
5	AKL	Auckland International	Perth	101773	12%
6	ADL	Adelaide		38466	4%
7	CHC	Christchurch Internationa		24930	3%
8	WLG	Wellington Nz		14476	2%
9	CNS	Cairns		7730	1%
10	MPN	Mount Pleasant (int)		7486	1%
11	CBR	Canberra		5026	1%
12	NAN	Nadi International		3753	0%
13	DRW	Darwin		3175	0%
14	HBA	Hobart Ts Au		2669	0%
15	DUD	Dunedin(Taleri)		2667	0%
16	ZQN	Queenstown Frankton Intl.		2113	0%
17	NSN	Nelson		1804	0%

18	TSV	Townsville	1619	0%
19	PMR	Palmerston North	1554	0%
20	NPE	Napier/Hastings	1508	0%

Source: SABRE, PwC Analysis

3. The Outlook for 2040

3.1. Overview

In this section, we develop a list of cities that are likely to be the most influential in attracting UK traffic links to each global region. We combine a variety of sources, at both country and city level, into a picture of each region in 2040. Some evidence we apply across all the regions, but we also delve into location specific reports and projections to help in building the most credible and balanced perspective.

It should be noted that we have structured this section into seven geographic groupings to best fit with the literature we have reviewed. While these sections do not exactly map to the DfT model's zones, we have structured our city lists at the end of each section as per the model's zone structures.

3.2. Eastern Europe and Central Asia: Playing Catch-Up with its Neighbours

Many Eastern European cities have the potential to close the income gap to their peers in Western Europe between now and 2040. As we will go onto see, Poland in particular, has the potential to be an influential power within the region. However, this GDP growth is not likely to be driven by population growth, as the region's demographics are set to slow or even have negative population growth. This adds a degree of predictability when anticipating where demand for air traffic will lie within the region in 2040. East Europe has also seen buoyant growth in tourism, especially from Western European countries. The catalyst for much of this boom was the wave of states joining the EU in 2004, which also opened access for the free movement of labour across the continent. Migrant labour forces travel not only for work, but also on return journeys to visit friends and relatives whilst employed overseas. The growth of cheap air travel has played a large role in supporting this process.

Of all the zones considered this zone is most proximal to the UK and is highly served by low cost carriers. The exclusion of low cost carriers from this analysis makes identification of destinations and routes challenging as many will be almost exclusively low cost (see analysis in section 2 above and in Appendix B for further discussion). Additionally, it should be noted that in order to compete on these routes, full service carriers have had to reduce their fares (and to some extent their service offering) in order to compete with low cost, effectively blurring the distinction between what is a 'low cost' carrier and a 'full service' carrier.

This section covers DfT Model Zone 518 - East Europe only.

3.2.1. Viewpoint in 2013

We begin by looking at which cities carry the most weight within the region currently. One useful tool for doing this is provided by the Globalization and World Cities (GaWC) Research Network based at Loughborough University. This group ranks cities[2] by how integrated they are into the global network of all cities by studying the activity of advanced producer service firms and the world city network that their interactions create. Cities are ranked as alpha, beta, gamma or lower, where alpha signals a high level of network connectivity. For example, New York is considered to be an alpha ++ city (the highest ranking) while Cape Town is rated as a beta city and Leeds in the UK is rated as gamma. Within each category cities can also be either 'positive' or 'negative' (e.g. 'Beta +') allowing further differentiation between cities in each band.

These rankings are a useful proxy for the likelihood of business-orientated air traffic between cities such as London and the rest of the world, especially as the model is based on interactions between service firms and

[2] GaWC (2011), 'The World According to GaWC 2010'

their global offices. Therefore, Moscow is more likely to attract air demand to and from the UK than Kiev, based on this measure alone.

The scores of Eastern European cities in the rankings are displayed in Table 3.1 below.

Table 3.1: GaWC city integration rankings

City	Ranking	City	Ranking
Moscow	Alpha	Riga	Gamma +
Warsaw	Alpha -	Almaty	Gamma
Budapest	Beta	St.Petersburg	Gamma
Kiev	Beta	Vilnius	Gamma
Bucharest	Beta	Tallin	Gamma -
Sofia	Beta -		

Source: GaWC Research Network

Whilst these rankings give us an indication of which cities have the strongest global connections today, we are interested in the picture in 2040, and therefore move on to consider trends to 2040 in the next section below.

3.2.2. Trends to 2040

Starting at the country level, we look to PwC's World in 2050' projections[3] to pick out any key regional trends that may emerge over the next few decades. Based on our macroeconomic projections, Russia has the potential to be the fifth largest economy in the world by 2030, up from 6th position today, while Poland, which is predicted to be another rising star of the region, could also feature in the world's top 20 largest economies by 2030 at 19th, just behind Australia and Saudi Arabia.

Moving down to the city level, forecasts for some of the larger cities in the region are available which look out to 2025[4]. As we can see from table 3.2 below, many of the cities are expected to grow significantly in terms of GDP. Moscow, for example, has the potential to increase its GDP in 2008 by 70% by 2025, and is projected to climb up the PwC ranking of global cities. All of the other cities are also expected to experience impressive growth; however, their ranking relative to other cities is expected to fall, due to rapid expansion of cities in Latin America and the Far East. We should note that many of these countries and cities in the region are still likely to be outperforming their Western European peers in terms of GDP growth.

Table 3.2 Eastern European city GDP rankings in 2008 and 2025

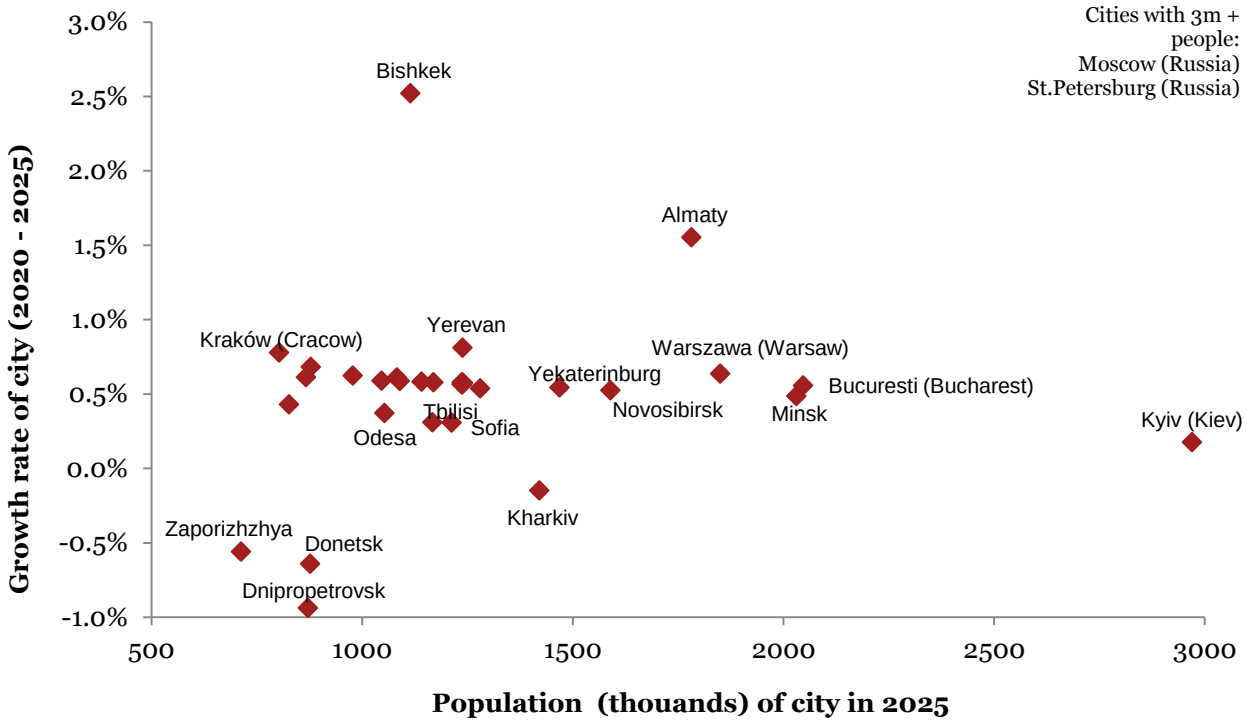
Source: PwC Global City GDP rankings (2008 – 2025)

City	GDP 2008 ($bn at PPP)	Rank 2008	GDP 2025 ($bn at 2008 PPP)	Rank 2025	% change in GDP (2008 – 2025)	Change in rank
Moscow	321	15	546	12	70%	+3
St. Petersburg	91	71	149	75	64%	-4
Warsaw	68	85	107	94	57%	-9
Budapest	53	100	80	116	51%	-16
Krakow	13	144	21	150	62%	-6

[3] PwC (2013), 'World in 2050: The BRICs and beyond: prospects, challenges and opportunities'
[4] PwC (2009), 'Global City GDP rankings 2008-2025'

Another way of understanding which cities should be influential by 2040 is by looking at areas that are rapidly urbanising. Figure 3.1 takes the UN's population projections[5] that run to 2025 and tries to compare cities by how rapidly they are expanding alongside their population size. We can see that there is a very uniform rate of population growth expected across cities in the region with most expanding at a modest 0.5% per year. Except perhaps for Almaty in Kazakhstan, few cities jump out from these projections. This suggests that this region could have relatively few cities challenging the current order as we move ahead to 2040.

Figure 3.1 Population size in 2025 and growth rate between 2020 and 2025 of East European cities



Source: UN population data, PwC Analysis

Based on the evidence above, and drawing upon some of the baseline analysis in section 2, we now look to form our list of destinations for Eastern Europe.

3.2.3. Viewpoint in 2040

Combining the evidence presented in Section 2 and the projections and observations drawn from our literature review, we now try to develop a picture of which countries and cities will be attractive destinations for UK air traffic in 2040. This list is constructed at the city level, and does not account for the fact that some cities are served by more than one major airport. Following a more detailed discussion later in the report on other economic considerations, this list is refined to individual airports. For clarity, the major airports in focus for each city are shown in brackets.

Zone 518: East Europe

City	Country	Justification and notes
Moscow (Domodedovo & Sheremetyevo)	Russia	Largest city in the region with strongly established UK links.

[5] UNDESA (2012), 'World Urbanization Prospects: The 2011 Revision'

Warsaw	Poland	Capital of the region's second largest country in 2040 in terms of GDP.
Bucharest (Otopeni & Baneasa)	Romania	Good connectivity and strong traffic to date.
Sofia	Bulgaria	Good connectivity, smaller city but strong traffic links.
Kiev	Ukraine	One of the largest cities in the region with good connectivity.
St. Petersburg	Russia	One of the largest cities in the region with strong traffic links.
Ashkabad	Turkmenistan	Capital of Turkmenistan and has had steady demand over the last decade.
Katowice	Poland	Strong traffic flows but primarily LCC currently.
Almaty	Kazakhstan	Largest city in Kazakhstan with strong demographics.
Tallinn	Estonia	Capital of Estonia with decent connectivity (albeit predominantly LCC).
Gdansk	Poland	Strong traffic flows but primarily LCC.
Minsk	Belarus	Large city with a significant portion of traffic, although didn't feature in the GaWC rankings for connectivity.
Riga	Latvia	Has very significant traffic flows but LCC activity appears to have crowded out FSC activity.
Tbilisi	Georgia	One of the more populous cities in the region, FSC growth has more than tripled since 2002.
Krakow	Poland	Strong GDP growth forecast and a major destination in the region, particularly for LCC traffic.
Odessa	Ukraine	Rapidly growing destination traffic.
Vilnius	Lithuania	Capital of Lithuania, decent global city connectivity.
Wroclaw	Poland	Very strong growth in LCC traffic post-2004
Poznan	Poland	Very strong growth in LCC traffic post-2004
Kaunas	Lithuania	One of the largest LCC destinations in the region.
Novosibirsk	Russia	One of the largest cities in the region.
Baku	Azerbaijan	Capital of Azerbaijan, limited UK air connections at current.
Akmola	Kazakhstan	Consistently growing FSC traffic over the last decade.
Kishinev (Chisinau)	Moldova	Capital of Moldova, consistently growing FSC traffic over the last decade.
Varna	Bulgaria	Popular tourist destination in Bulgaria.
Guryev (Atyrau)	Kazakhstan	Large oil industry presence.

3.3. Africa: Escaping the Poverty Trap

Africa has the potential to grow at a rapid pace through to 2040. A young population combined with growing investment could stimulate GDP growth that is above the world average and help many countries close the gap between themselves and more developed economies. However, the distribution of growth both across countries and cities will be uneven. Nigeria is predicted to be the rising star of Africa as it capitalises on its oil resources and sees mass urbanisation into its cities, while it is expected that other countries, particularly those that are landlocked, may maintain a higher proportion of rural agricultural activity and struggle to keep pace with the continent leaders. For any country or even city, whether this potential is realised, or whether new potential is unlocked, will depend on many factors, in particular, effective policies, diseases, conflicts, natural disasters and global commodity prices.

The UK's colonial ties with a number of African countries will also continue to support growth and develop air links. Government aid, foreign direct investment, and émigrés both from and to Africa, help to support a healthy market of travellers visiting friends and relatives. Colonial ties to countries such as Nigeria, Libya, and Kenya coupled with increasing wealth in these countries is likely to support and increase this trend as opportunities for cross border travel improve.

This section covers DfT Model Zone 519 – West Africa; Zone 520 – East Africa; and Zone 521 – Southern Africa.

3.3.1. Viewpoint in 2013

As mentioned above, GDP growth has been very robust in Africa, albeit from a low starting point. Table 3.3 below shows the growth figures for 2010 across the whole continent and the breakdown by regions[6]. The whole continent grew at an impressive 4.9% which is well above the trend rate seen in developed markets, but below rates seen in recent years in some Asian economies such as India, China and Indonesia.

Table 3.3 Real GDP growth by sub-region (%)

Region	*2010 GDP growth (%)*
Africa	**4.9**
Central Africa	4.7
East Africa	6.2
North Africa	4.7
Southern Africa	3.3
West Africa	6.7

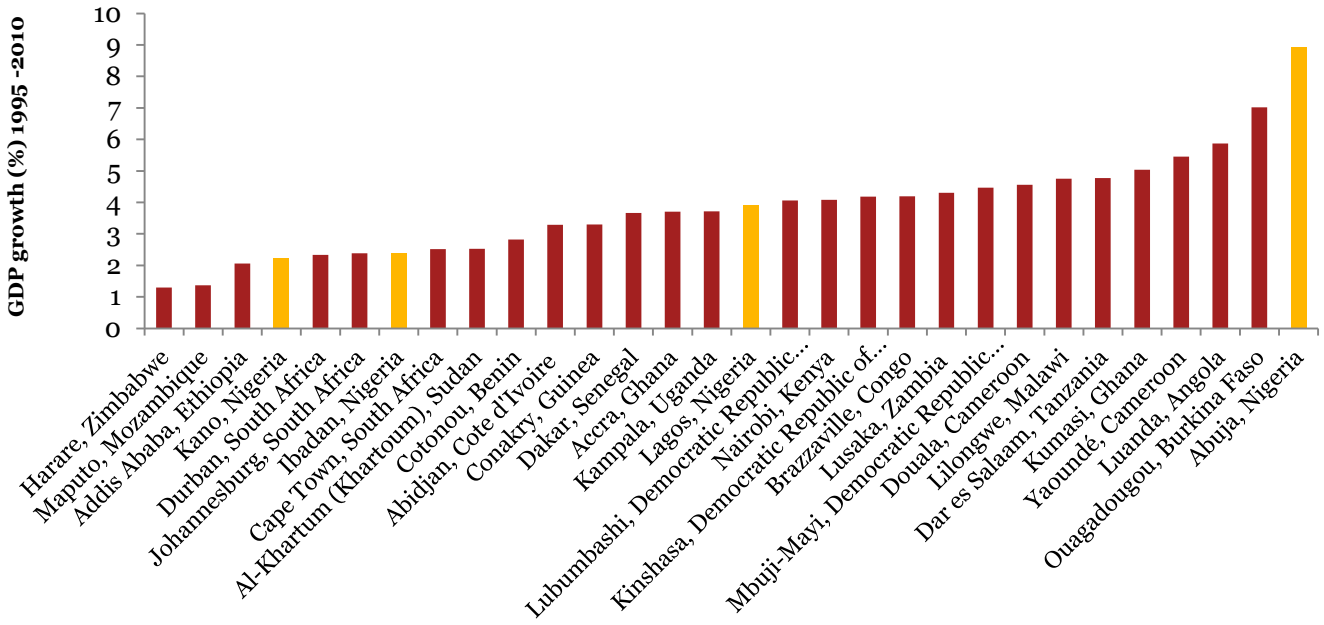
Source: African Development Bank Group

Growth rates have also differed between regions. For instance, West Africa, which is forecast to lead African growth in years to come, was growing the fastest in 2010 at a rate of 6.7% per year, primarily due to the speed of development in countries such as Nigeria and Ghana. Southern African growth meanwhile has lagged behind the continent average; within this region South Africa is already embedded as a key long-haul destination out of the UK, while surrounding economies only attract an extremely small portion of traffic to the region as shown in section 2 above. East Africa has also been expanding rapidly, a good example of this being the growth in Tanzania which has consistently been around 6-7% for the last decade and has a flourishing tourism sector.

[6] African Development Bank (2011), 'Africa in 50 Years Time: The Road Towards Inclusive Growth'

Moving down to the city level[7], we can see that cities in Nigeria have been posting strong GDP growth between 1995 and 2010; Abuja, Lagos, Kano and Ibadan all feature in the top four (highlighted in yellow). Other top performers have been Ouagadougou, Luanda and Yaounde. To put some of these numbers into perspective, a city that is growing at 7% percent a year will approximately double in size every 10 years.

Figure 3.2 Historical GDP growth of selected African cities



Source: UNDESA Population Division, PwC Analysis

Another way of looking at a city's potential as a flight destination is to look at how it connects into the global network of cities. The latest update of the GaWC city list[8] was conducted in 2010 and the table below shows some selected African cities that feature in the rankings, ordered from most connected (Johannesburg) to less connected cities (e.g. Kampala). The table also includes cities with a ranking of 'sufficiency' or 'high sufficiency', GaWC describe these cities as cities that are not world cities but that have sufficient services so as not to be overly dependent on world cities. Two categories of city tend to fit into this category: smaller capital cities, and traditional centres of manufacturing regions.[9]

Table 3.4 GaWC rankings for African cities

City	Ranking	City	Ranking
Johannesburg	Alpha -	Dakar	Sufficiency
Cairo	Beta +	Luanda	Sufficiency
Cape Town	Beta	Abuja	Sufficiency
Port Louis	Beta -	Lusaka	Sufficiency
Casablanca	Beta -	Kampala	Sufficiency
Lagos	Beta -	Abidjan	Sufficiency

[7] UNDESA (2012), 'World Urbanization Prospects: The 2011 Revision'
[8] GaWC (2011), 'The World According to GaWC 2010'
[9] Ibid

Nairobi	Gamma +	Windhoek	Sufficiency
Tunis	Gamma +	Alexandria	Sufficiency
Accra	Gamma -	Gaborone	Sufficiency
Pretoria	High sufficiency	Harare	Sufficiency
Algiers	High sufficiency	Douala	Sufficiency
Dar es Salaam	Sufficiency		

Source: GaWC Research Network

We now move on from today's perspective to try and identify key trends to 2040 before settling on a reasonable viewpoint for 2040.

3.3.2. Trends to 2040

GDP trends

We begin by looking at GDP trends at the regional level within Africa. The African Development Bank[10] has made forecasts for each region out to 2040 (shown in table 3.5 below). Both the high-case and low-case scenarios are presented to offer a balanced view on the prospects for each of the regions.

Table 3.5 Real GDP growth rates (%)

Region	2000	2010	2020F	2030F	2040F
	Actual	Actual	Low Case – High Case	Low Case – High Case	Low Case – High Case
Africa	2.1	2.6	3.8 – 4.5	3.9 – 4.6	4 – 4.8
Central	-4	2.2	4.5 – 5.3	4.5 – 5.3	1.8 – 2.1
East	4.8	3.5	5 – 6	6.6 – 7.9	6.9 – 8.2
North	2.2	3.1	3.8 – 4.5	3.5 – 4.1	3.5 – 4.2
Southern	3.3	1.6	2 – 2.4	3.5 – 4.2	4.3 – 5.1
West	1.5	4.2	6 – 7.2	3.3 – 3.9	3 – 3.6

Source: African Development Bank Group

We can see that in both cases, for Africa as a whole, the growth rate is accelerating all the way until 2040. Within the regions, West Africa grows quickly until 2020 but then growth slows to below the average for the region. East Africa is predicted to grow at the most rapid pace through to 2040, with growth increasing over time and a high case growth rate of 8.2% in 2040. Growth in Southern and Central Africa is predicted to be relatively slow as they try to overcome a whole range of economic, political and natural challenges, therefore we may see migration of traffic between some sets of countries within the continent between now and 2040. The more dynamic environment in West and East Africa could mean that cities and countries in these regions are more likely candidates for new air route expansion compared to some of the slower growing regions.

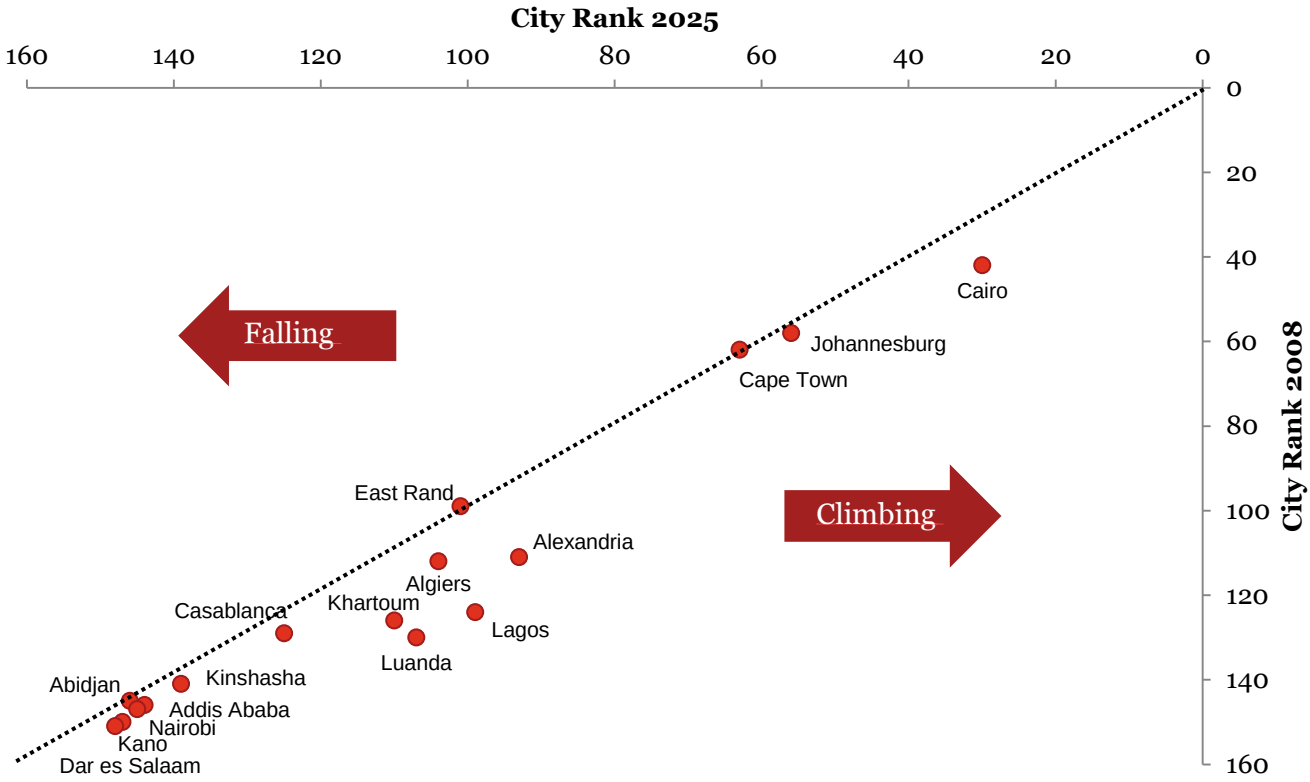
Using PwC's city GDP forecasts[11] we now go down to a more granular level and try to pick out key cities that are likely to be expanding rapidly in years to come. The 151 largest cities (as of 2008 GDP) are forecast out until 2025 and therefore for all these cities we have a ranking in both 2008 and 2025. Figure 3.3 plots a scatter of these rankings for the African cities and shows which cities are predicted to climb up the GDP rankings by 2025 and which are more likely to fall down the rankings. The dotted line reflects a position in which a city maintains its ranking in 2025, while cities below the line have moved up the ranking and cities above the line have moved down the ranking. The chart also shows us how African cities compare globally - cities with larger GDP will

[10] African Development Bank (2011), 'Africa in 50 Years Time: The Road Towards Inclusive Growth'
[11] PwC (2009), 'Global City GDP rankings 2008-2025'

appear in the top right of the chart (i.e. have a ranking close to 1), while cities with smaller GDP will appear in the bottom left (i.e. have a ranking close to 151).

We can see that Cairo, Cape Town and Johannesburg are far larger than most other African cities in terms of GDP (world rankings of 70 or less), while there is a cluster of West and East African cities towards the bottom end of the rankings. In terms of climbing up the rankings the three stand-out cities are Lagos, Alexandria and Luanda. Although these GDP numbers are only projected out to 2025 we can infer some conclusions about the path until 2040 from them. We would expect that the relative rise of the three stand-out positions will help cement their prospects as a UK air destination, while the three largest cities are holding their already strong positions or even improving their standing in the case of Cairo. The cluster of cities further down the rankings, which does not appear to climb the rankings significantly, do offer guidance as to which other cities we might want to consider as potential destinations by 2040.

Figure 3.3 African city GDP rankings in 2008 and 2025



Source: PwC Global City GDP rankings (2008 – 2025)

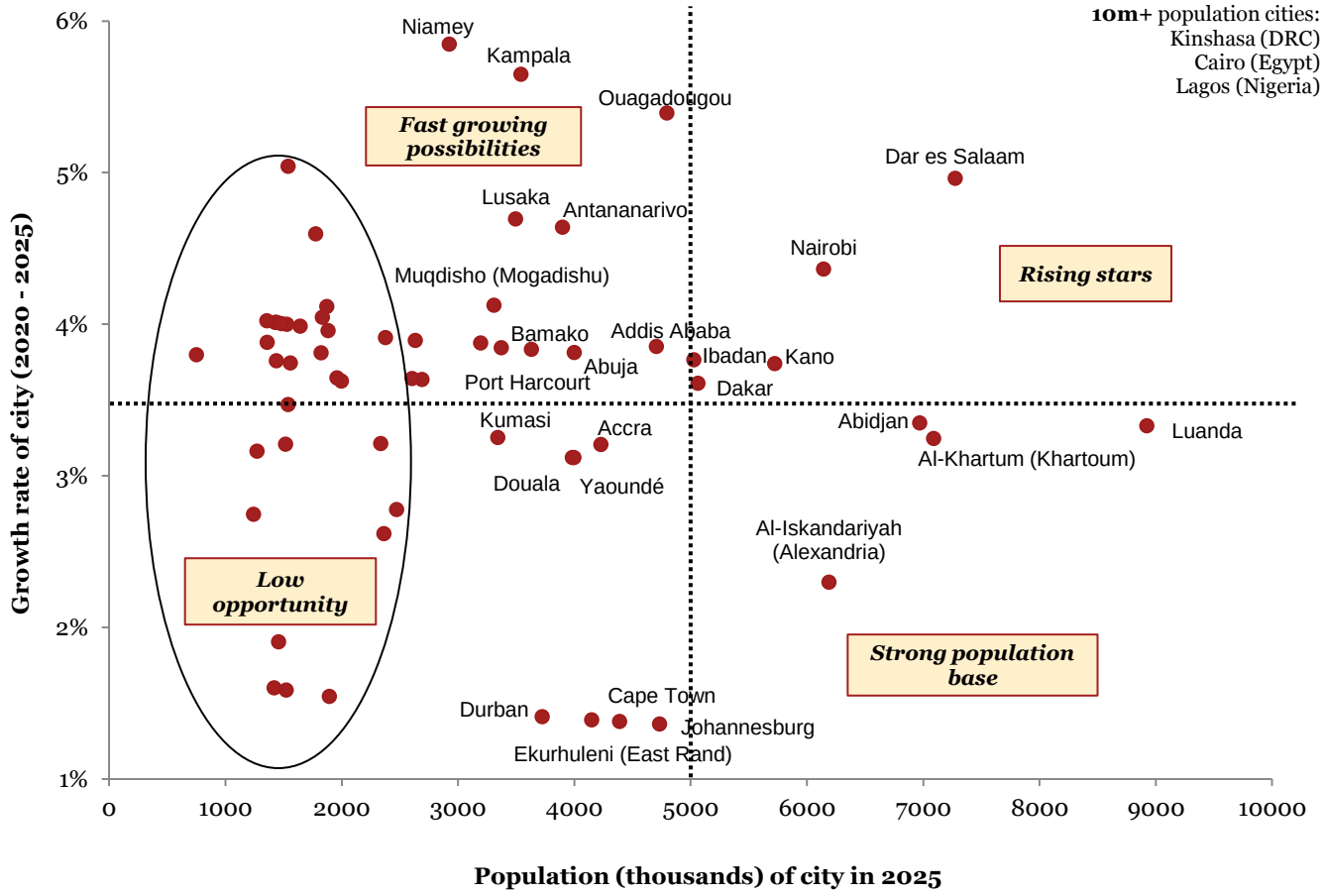
Demographic trends

A very important indicator of economic potential within a developing country is the rate of urbanization it is experiencing. Typically, a country with an abundance of labour that is migrating to urban areas is coupled with a period of high-growth and industrialization. This process has taken place to a large degree in Asia and Latin America, but is now getting underway in Africa and will continue to gather pace as we move toward 2040. The African Development Bank in their assessment of Africa in 50 years' time anticipates that, "By 2060, much of the population of Africa will be in coastal mega-cities, as in Asia and Latin America. Some migration will be international, from the landlocked countries to the coastal ones; some will be internal."[12] This highlights that particular attention should be paid to large and growing coastal cities. Figure 3.4 below develops this focus on

[12]African Development Bank (2011), 'Africa in 50 Years' Time: The Road Towards Inclusive Growth', pg.35

population size of cities and their growth rate. By employing the UN's population forecasts which run until 2025, we can plot population size in 2025 against the growth rate of that city's population in the preceding 5 year period (2020-2025)so as to categorise cities based on population trends. Cities are categorized into one of the following: a "rising star", which has both a large population and rapid growth; a "fast growing possibility", which has a population of less than 5 million people but is growing and experiencing fast expansion; a "strong population base", a large population but with low growth; and a "low opportunity" city, with a small population. It should be noted that when categorized in this way, categorization is purely on a demographic basis and does not reflect all the characteristics that could make a city appealing for air travel to and from the UK. Nonetheless the analysis does yield some interesting results: aside from the three largest cities of Kinshasa, Cairo and Lagos, which we exclude to sharpen the focus on the smaller cities, we can see that Dar es Salaam and Nairobi are leading the way demographically in population terms. Another noticeable feature is that the major South African cities are clustered towards the bottom the figure putting them in the "strong population base" category.

Figure 3.4 Population size in 2025 and growth rate between 2020 and 2025 of African cities



Source: UN population data, PwC Analysis

One key reason for these demographics being a key determinant of air travel possibilities is because of the economic and trade potential that is associated with a large, growing, and young workforce. The table below demonstrates this point further, as it shows the rise of Africa's working age population from today until 2040[13].Under the low-scenario we can approximately expect the working age population across the whole continent to be two and a half times larger in 2040 compared to 2010. Furthermore, female participation rates are likely to increase significantly over the period, which will reinforce this trend. A report[14] on the rise of the consuming class in urban agglomerations identified key global cities where there was going to be strong growth

[13] African Development Bank (2011), 'Africa in 50 Years Time: The Road Towards Inclusive Growth'
[14] McKinsey Global Institute (2012), 'Urban World: Cities and the rise of the consuming class',

in young-entry level consumers and it is closely tied to the figure above, with cities such as Lagos, Dar es Salaam and Ouagadougou featuring in the top 5.[15]

Figure 3.4b Working age (15-64 years) population growth in Africa (thousands)

Region	2010	2020F	2030F	2040F
	Actual	High case – low case	High case – low case	High case – low case
Africa	399	540 – 510	777 – 736	1122 – 1065
Cental Africa	41	59 -55	89 – 84	136 – 129
East Africa	123	172 – 162	261 – 246	395 – 374
North Africa	62	75 – 72	97 – 92	124 – 119
Southern Africa	67	88 – 85	118 – 114	158 – 152
West Africa	106	147 - 138	213 - 201	309 - 292

Source: African Development Bank

3.3.3. Viewpoint in 2040

Combining the evidence presented in Section 2 and the projections and observations drawn from our literature review, we now try to develop a picture of which cities will be attractive destinations for UK air traffic in 2040.

Zone 519: West Africa

City	Country	Justification and notes
Lagos	Nigeria	Predicted to be a megacity and already has substantial traffic.
Accra	Ghana	Another key coastal town in West Africa with a significant UK traffic flow.
Abuja	Nigeria	Rapidly growing currently and will likely become a key city if Nigeria can fulfil its economic potential to 2040.
Freetown	Sierra Leone	Currently has strong and growing UK traffic flows and could become another key coastal city.
Port Harcourt	Nigeria	Key petroleum hub for Nigeria and it likely to be a popular destination for business traffic.
Abidjan	Ivory Coast	Coastal city with a strong population base to build from and attracts a decent portion of UK traffic currently.
Douala	Cameroon	Featured on the GaWC list of connected cities and again has an advantageous coastal location for trade. Also has consistent UK traffic flows at current.
Dakar	Senegal	Featured at a relatively high position in the GaWC list, coastal location, promising demographics.

[15] Ibid

Libreville	Gabon	Growing UK traffic, coastal location, few other attributes signal potential though.
Monrovia	Liberia	UK traffic grown through the recession, coastal location, few other attributed signal potential though.
Malabo	Equatorial Guinea	10th most popular West African destination 2012, however limited guidance as to whether this will be sustainable to 2040.
Conakry	Guinea	UK traffic grown through the recession, coastal location, few other attributed signal potential though.
Banjul	Gambia	Very significant UK traffic flows pre-2005, however have declined since, coastal location, limited future signals of potential.
Ouagadougou	Burkina Faso	Flagged as having very rapid urbanisation and a young labour force, landlocked city.
Yaoundé	Cameroon	Decent combination of population base and city grow, however is landlocked.
Kano	Nigeria	Another of Nigeria's expanding cities. Flagged as a "rising star" and is moving up the city GDP rankings between 2008 and 2025.
Ibadan	Nigeria	Slightly smaller than Kano, but predicted to grow equally as fast. Closer to Lagos and the coast than Kano.
Bamako	Mali	Coastal city with decent demographics. Perhaps one of the most marginal cities.
Cape Verde	Cape Verde	Popular tourism destination. 3 airports of note, Boa Vista (BVC), Praia (RAI) and Sal (SID). Most recently Boa Vista has received most UK traffic and started international operation in 2007 with a new runway.
Hassi Messaoud	Algeria	Oil town based in Algeria that had sizeable traffic pre-2008.

Zone 520: East Africa

City	Country	Justification and notes
Cairo	Egypt	Well established portion of UK traffic to the region, as well as having a high GDP, good demographics and good connectivity.
Nairobi	Kenya	Large UK air traffic in 2012 in line with Cairo and very promising demographics.
Entebbe	Uganda	Growing portion of UK traffic in recent years with a solid foundation.
Dar es Salaam	Tanzania	Flagged as a "rising star" demographically, strong labour force growth, good connectivity and solid tourism foundations in Tanzania.
Addis Ababa	Ethiopia	Larger 2025 GDP forecast compared to other East African cities, good demographic potential, but landlocked. Growing UK traffic over last 10 years.
Sharm El Sheikh	Egypt	Served predominantly by LCCs currently. Established as a popular UK tourism destination.
Khartoum	Sudan	Strong population foundation, decent portion of UK traffic today and predicted to climb up the city GDP rankings by 2025.
Hurghada	Egypt	UK traffic to tourist destination has collapsed post-2008 but was significant beforehand; therefore there is the possibility to rebound, but LCCs likely to be served by LCCs.
Mombasa	Kenya	Has the potential to gain from East Africa's possible rapid expansion between now and 2040. Non-trivial UK traffic currently.
Zanzibar	Tanzania	Potential to be a growing UK tourist destination, strong traffic growth over the last 10 years.
Seychelles	Seychelles	Long established UK tourist destination.
Luxor	Egypt	UK traffic has declined significantly post-2008, more likely to be served by LCCs, little guidance on business potential going forward.
Kilimanjaro	Tanzania	Growing base for tourism, future predictions hard to assess but tourism attraction not expected to diminish significantly.
Kigali	Rwanda	Rwanda is higher than many sub-Saharan countries on the World Bank's measures of 'Doing Business'. Strong growth in traffic over last 10 years. Landlocked city.
Kampala	Uganda	Registered a relatively higher connectivity score and is predicted to have a rapidly growing urban population in the future.
Marsa Alam	Egypt	Previously had strong tourist flows from the UK but LCCs more likely to take Egypt tourism market away from FSCs.
Djibouti	Djibouti	Strategic shipping location, coastal city, small traffic currently and limited other information on future prospects.
Alexandria	Egypt	Decent demographics, strong and growing GDP and decent connectivity.

Mogadishu	Somalia	Coastal location, strong demographics, many challenges to overcome to become a serious destination but has made progress recently.

Zone 521: Southern Africa

City	Country	Justification and notes
Johannesburg	South Africa	Firmly established UK long-haul destination. Strongly connected to global city network.
Cape Town	South Africa	Firmly established UK long-haul destination. Well connected to global city network.
Durban	South Africa	Significant portion ok 2012 UK traffic, although these numbers have been declining for several years.
Luanda	Angola	Large population base, coastal city, sustained upward trend in UK traffic.
Lusaka	Zambia	Flagged as a "fast growing possibility" due to promising demographics.
Kinshasa	DRC	Megacity of the future, although landlocked and faces many challenges.
Windhoek	Namibia	Steady small portion of UK traffic to the region, small and landlocked city though so potential to 2040 might be limited.
Harare	Zimbabwe	Steady and significant portion of UK traffic, and featured on the GaWC connectivity list.
Mauritius	Mauritius	Established tourism destination and we have no reason to suspect that this demand will diminish.
Lilongwe	Malawi	Low population and landlocked, but has seen a growing trend of UK traffic for the last decade and features in the top 10 destinations in the region for 2012.
Port Elizabeth	South Africa	Major port, large South African city, although only gets small traffic flows currently.
Antananarivo	Madagascar	Good potential according to demographics, could gain traffic as Madagascar develops.
Gaborone	Botswana	Based on growing numbers over the last 10 years, robust GDP growth and relatively strong institutions within Botswana
Maputo	Mozambique	Based on growing numbers over the last 10 years and coastal location.

3.4. Central and Latin America and the Caribbean: Where Tourism meets Industry

Latin American presents an interesting dichotomy when studying the future of UK air travel to and from the region. On the one hand the UK has large amounts of leisure traffic to locations around the Caribbean in particular. On the other hand, business traffic is directed to major developing cities such as Rio de Janeiro, Sao Paulo or Mexico City. Therefore, where in other sections the growth of cities or GDP growth of the country may have been a good proxy for air demand in 2040, for this region we have to account for a high proportion of holiday-related passengers which could be only marginally correlated with GDP growth in the destination country.

This section covers DfT Model Zone 522 – Latin America only.

3.4.1. Viewpoint in 2013

Over the last few years Brazil has been the rising star in the Latin American economy, recognised as such by inclusion in the 'BRIC' group of countries and linked in part to discoveries of abundances of new oil reserves. This has led to an explosion of business interest and investment into the Brazilian economy. This effect is captured in the connectivity rankings[16] of cities in Latin America as shown in table 3.6 below, where Sao Paulo ranks top out of the whole region, Rio is ranked highly and Porto Alegre also features. The other cities that dominate the rankings for Latin America are almost exclusively the capital cities of the larger countries in the region.

Table 3.6 GaWC city integration rankings:

City	Ranking	City	Ranking
Sao Paulo	Alpha	Panama City	Beta -
Mexico City	Alpha	San Juan	Beta -
Buenos Aires	Alpha	Guatemala City	Beta -
Santiago	Alpha -	San Jose	Gamma +
Bogota	Beta +	Guadalajara	Gamma
Caracas	Beta	Quito	Gamma
Lima	Beta	Santo Domingo	Gamma
Montevideo	Beta	San Salvador	Gamma
Rio de Janeiro	Beta -	Porto Alegre	Gamma -
Monterrey	Beta -	Tegucigalpa	Gamma -

Source: GaWC Research Network

An LSECities report[17] on urban areas in South America ranked cities in the region by their urban competitiveness as measured by a number of indicators that compare each Latin American city's capacity to attract and keep companies doing business in their city. Once again Sao Paulo was the highest ranked city in the region, but other Brazilian cities were placed into this top 20, including Belo Horizonte in the South East of the

[16] GaWC (2011), 'The World According to GaWC 2010'
[17] LSECities (2008), 'South American Cities: Securing an Urban Future'

country, Fortaleza in the North East, Florianopolis which is located approximately halfway between Sao Paulo and Porto Alegre, nearby Curitiba and the nation's administrative capital Brasilia.

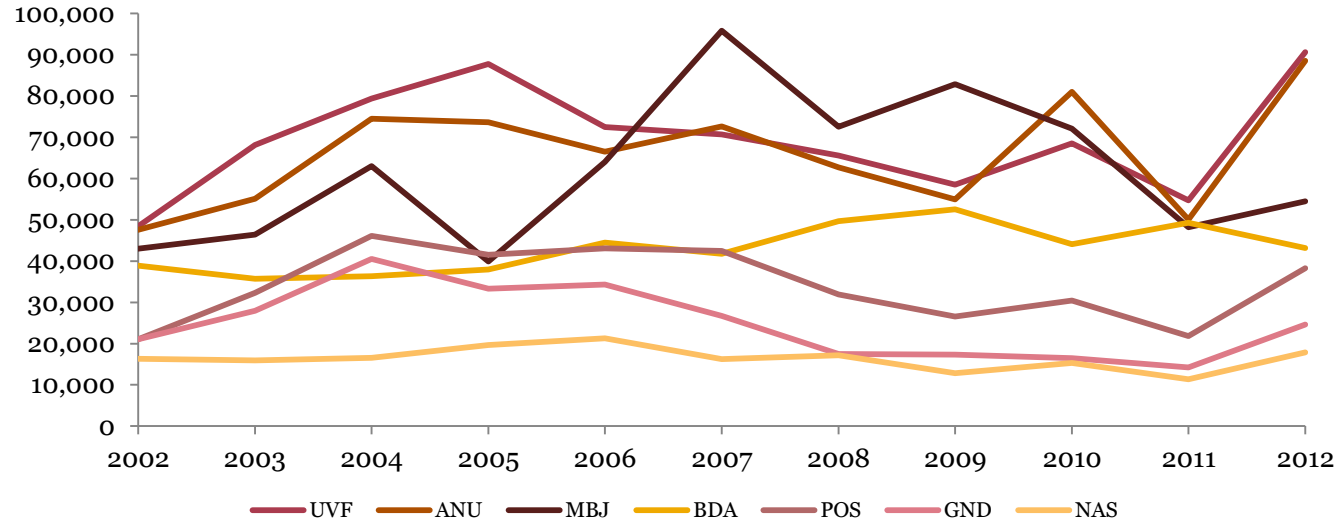
Table 3.7 Top places for business in South America

Rank	City	Rank	City
1	Sao Paulo	11	Panama City
2	Miami	12	Queretaro
3	Santiago	13	Porto Alegre
4	Mexico City	14	Belo Horizonte
5	Buenos Aires	15	Guadalajara
6	Monterrey	16	Florianopolis
7	Rio de Janeiro	17	Brasilia
8	Bogota	18	Chihuahua
9	Lima	19	Fortaleza
10	Curitiba	20	Montevideo

Source: LSECities - South American Cities: securing an urban future

As noted in the introduction to this section, Latin America has a mix of air traffic (i.e. both leisure and business traffic) and these measures of doing business and connectivity are not likely to affect the choices leisure travellers make when selecting holiday destinations. Figures 3.5 and table 3.8 below investigate this dichotomy to date, before exploring how these trends might develop up to 2040. Figure 3.5 tracks the evolution of UK air travel to a series of popular Caribbean holiday destinations from 2002 to 2012. Of these destinations (e.g. Bermuda (NAS) and St.Lucia (UVF)) we can see that there is no clear upward trend, in other words, the market has remained stable over the past decade. One key determining factor in leisure traffic to an island destination is hotel capacity – without additional hotel capacity, passenger numbers are unlikely to rise as there are no facilities for tourists to make use of. As such, hotel capacity effectively caps passenger volumes, as may be the case for Caribbean destinations.

Figure 3.5 UK annual passenger numbers to popular Caribbean destinations



Source: SABRE airport data intelligence, PwC Analysis

Table 3.8 The rise of UK to Brazil Air traffic

Airport Code	Airport Name	2002 PAX	2012 PAX
GIG	Rio De Janeiro (Galeao)	39,292	104,288
GRU	Sao Paulo (Guarulhos)	40,916	99,841
POA	Porto Alegre Br	1,773	8,435
CNF	Belo Horizonte	2,035	7,540

Source: SABRE airport data intelligence, PwC Analysis

In contrast to this, table 3.8 shows that air travel to Brazil is growing sharply, with traffic to both Rio and Sao Paulo more than doubling in 10 years. However, looking at the figures carefully we can see that despite very high year-on-year growth at other Brazilian cities such as Porto Alegre and Belo Horizonte, total passengers are still a long way below many of the popular Caribbean destinations (c.20,000 to 90,000 pax pa.). Whether there will be continued significant growth to countries such as Mexico and Brazil able to overtake the number of passengers flying to the Caribbean by 2040 is covered in the next subsection.

It should also be noted that within Airbus's ranking of the top 10 cities[18] in Latin America, Belo Horizonte, Rio de Janeiro, and Salvador (Brazil) featured in addition to the major capital cities.

3.4.2. Trends to 2040

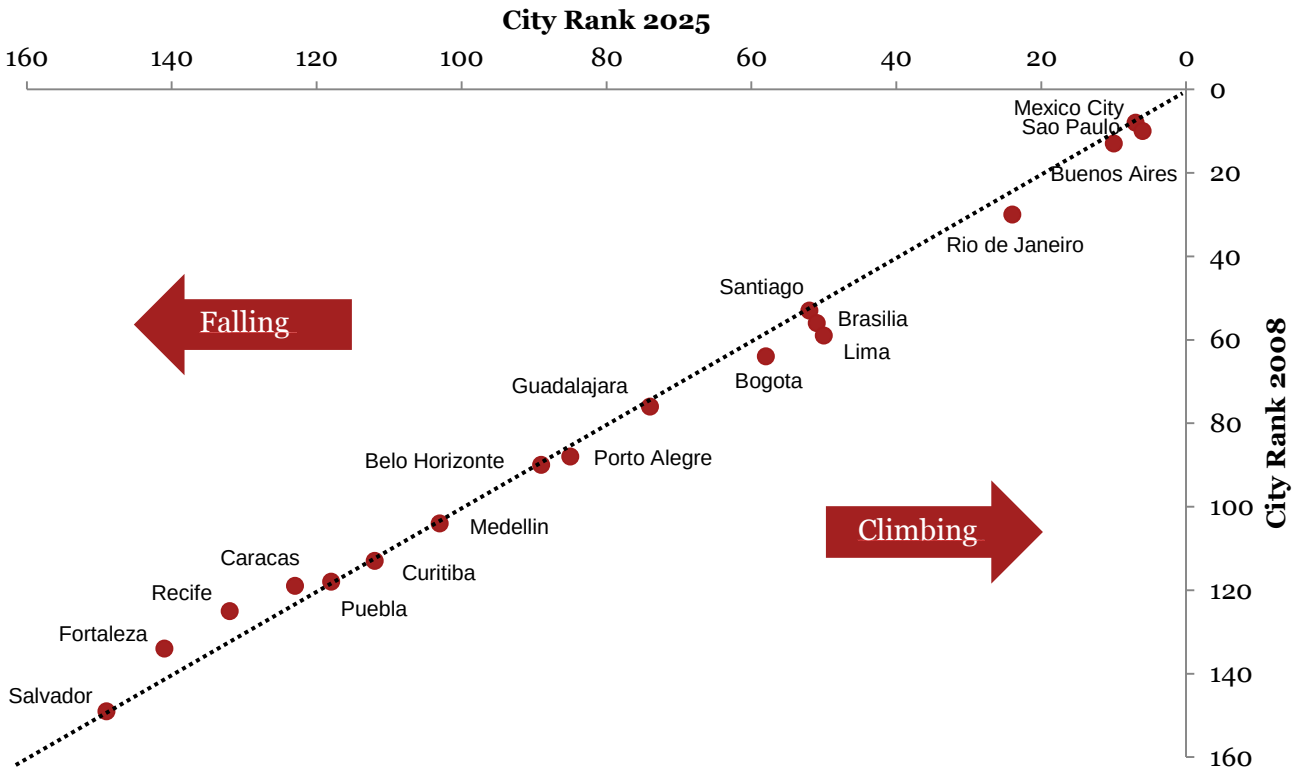
As shown in figure 3.9 in section 3.7.2 below, three of the major economies in the region are projected to have a high growth rate until 2050[19]. Mexico is leading the way with the potential to have a growth rate of just under 4%, while Brazil and Argentina respectively are close behind. However, if Brazil can utilise its vast natural resources in an effective way, it could become an economic powerhouse. Corruption and the natural resource

[18] Airbus (2012), 'Navigating the Future: Global Market Forecast 2012 – 2031'
[19] PwC (2013), 'World in 2050: The BRICs and beyond: prospects, challenges and opportunities'

trap (where currency appreciation as a result of abundant resources can harm other export sectors) are some of the challenging issues Brazil may have to contend with.

At the city level Mexico City, Sao Paulo and Buenos Aires are still the giants of both the region and the world in 2025[20], while Rio and the capital cities of Lima, Brasilia, Santiago and Bogota are not ranked too far behind. Overall there does not appear to be any large changes, either up or down the rankings, with most cities holding their position in the rankings at broadly the same position in 2025 as it was in 2008. Once again, similar names as in the business rankings have appeared, with Guadalajara, Porto Alegre and Belo Horizonte all projected to be in the top 100 cities by GDP in 2025.

Figure 3.6 Latin American city GDP rankings in 2008 and 2025

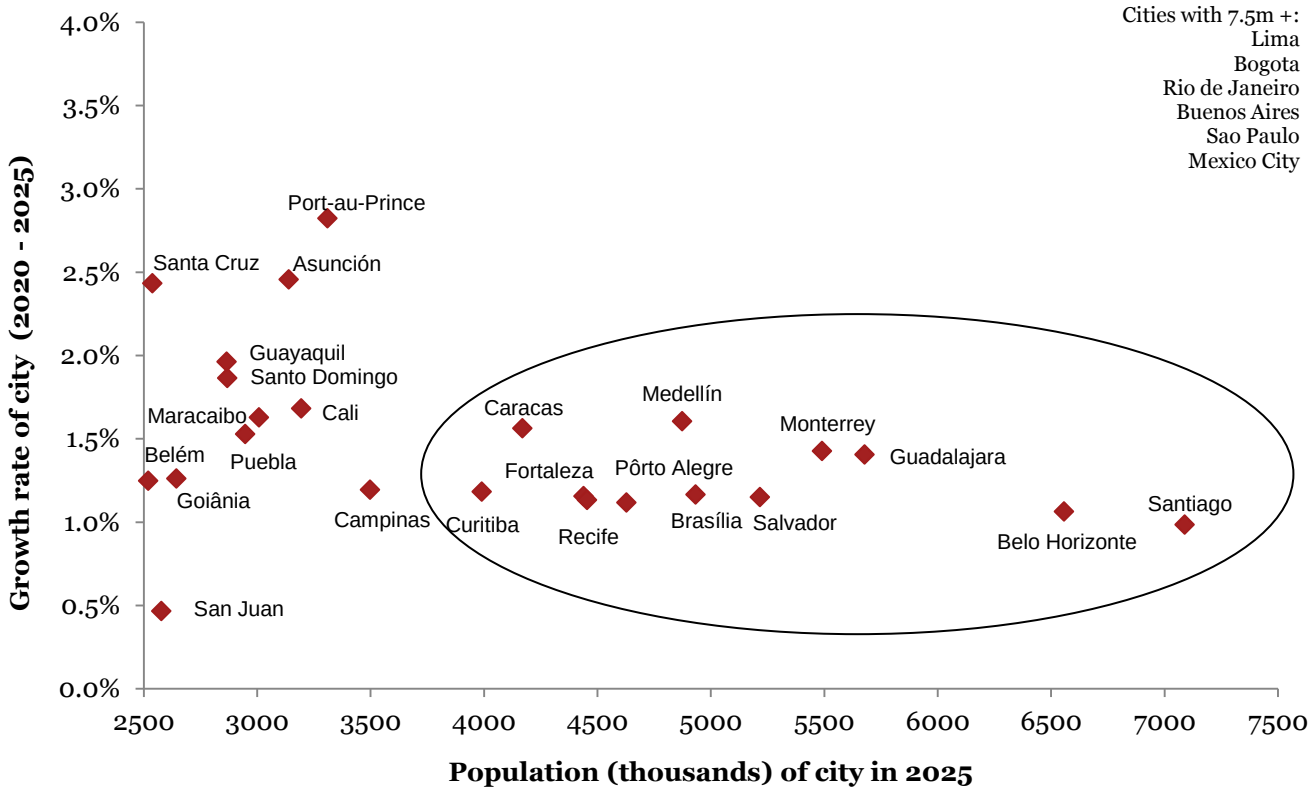


Source: PwC Global City GDP rankings (2008 – 2025)

Latin America, despite being relatively wealthy compared with many Far Eastern and African countries, is still very much an emerging market region, therefore the demographics of the cities in the region and key trends in urbanisation are important to consider. Figure 3.7 below charts these trends to 2025, by showing city population size in 2025 against its growth rate between 2020 and 2025. As before, a similar list of cities emerges from the population analysis, as circled in the diagram. This consistency with earlier analyses gives confidence that this group are the best candidates for attracting future business traffic to the region in 2040.

[20] PwC (2009), 'Global City GDP rankings 2008-2025'

Figure 3.7 Population size in 2025 and growth rate between 2020 and 2025 of Latin American cities



Source: UN population data, PwC Analysis

As further confirmation that Belo Horizonte and Porto Alegre could be cities of opportunity by 2040, McKinsey's report on the progress of world cities to 2030 predicted that Belo Horizonte will be the 3rd fastest growing city in Brazil, while they also mentioned that Porto Alegre was one of the largest cities and was a regional capital[21]. Predictions were also made around which cities were likely to be the fastest growing in Mexico by 2030 and, in line with the analysis above, Mexico City, Monterrey and Guadalajara were all predicted to be strong growing cities.

3.4.3. Viewpoint in 2040

Combining the evidence presented in Section 2 and the projections and observations drawn from our literature review, the table below presents a list of potential countries and cities that will be attractive destinations for UK air traffic in 2040.

Zone 522: Latin America

City	Country	Justification and notes
Sao Paulo	Brazil	Powerhouse of the region.
Mexico City	Mexico	Powerhouse of the region.
Rio de Janeiro	Brazil	Powerhouse of the region.

[21] McKinsey Global Institute (2012), 'Urban World: Cities and the rise of the consuming class' pg.9 and pg.25

Buenos Aires	Argentina	One of the largest cities in the world on GDP both today and also anticipated to be in 2025.
Lima	Peru	Capital city with significant traffic flows, relatively constant over time.
Bogota	Colombia	Capital city, one of the largest cities in the region.
Santiago	Chile	Capital city, one of the largest cities in the region.
Caracas	Venezuela	Capital city in oil rich Venezuela, currently with low volume of traffic.
Porto Alegre	Brazil	Predicted to be a rising star as the Brazilian economy develops.
Belo Horizonte	Brazil	Predicted to be a rising star as the Brazilian economy develops.
Monterrey	Mexico	Predicted to be a rising star as the Mexican economy develops.
Guadalajara	Mexico	Predicted to be a rising star as the Mexican economy develops.
Quito	Ecuador	Observed to have good connectivity and already attracts minor traffic flows.
Salvador	El Salvador	Traffic flows to this city have been growing over the last decade and could play a big role in Brazil's economy by 2040.
Panama City	Panama	Ranks very high up on connectivity, traffic flows have doubled from 2002 to 2012.
Curitiba	Brazil	Scores well on a range of measures above.
Montevideo	Uruguay	Features in the rankings of connectivity and urban competitiveness.
San Juan	Puerto Rico	Capital of Puerto Rico, moderate flows compared to other cities but traffic has been relatively stagnant over the last 10 years.
Brasilia	Brazil	Administrative capital of Brazil, could expand as Brazil's institutional framework develops and enlarges.
Guatemala City	Guatemala	Good connectivity but small in size and traffic flows.
Bridgetown	Barbados	A major destination for Caribbean travellers from the UK.
Kingston	Jamaica	Traffic flows from the UK have been steadily declining but currently it is clearly a top 20 destination for the region.
Antigua	Antigua & Barbuda	A major destination for Caribbean travellers from the UK.
St.Lucia	St.Lucia	A major destination for Caribbean travellers from the UK.
Bermuda	British overseas territory	A moderately popular destination for Caribbean travellers from the UK.
Montego Bay	Jamaica	A moderately popular destination for Caribbean travellers from the UK.
Havana	Cuba	Currently ranks in the top 10 for traffic and this has been growing strongly.

Port of Spain	Trinidad & Tobago	A moderately popular destination for Caribbean travellers from the UK.
Grenada	Grenada	A moderately popular destination for Caribbean travellers from the UK.
Grand Cayman	British Overseas territory	A moderately popular destination for Caribbean travellers from the UK.
Tobago	Trinidad & Tobago	Attracts leisure traffic from the UK but currently ranks outside the top 20 destinations for the region.
St.Kitts	St.Kitts & Nevis	Attracts leisure traffic from the UK but currently ranks outside the top 20 destinations for the region.
Punta Cana	Dominican Republic	Attracts leisure traffic from the UK but currently ranks outside the top 20 destinations for the region.
Cancun	Mexico	Major leisure destination for UK traffic, that has experienced explosive growth over the last decade.
Bahamas	Bahamas	A moderately popular destination for Caribbean travellers from the UK.
San Jose	Costa Rica	Currently ranks in the top 20 with good connectivity.

3.5. Middle East: Capitalising on Abundant Resources

3.5.1. Viewpoint in 2013

In the Middle East one single destination overshadows all the others - Dubai. In 2012, this single destination took 44% share of traffic to the region. Beyond this one dominant hub airport, the picture is not as complex as other regions such as Latin America or the Far East, as the remaining traffic is concentrated at just a handful of cities. This is captured by the fact that the top 5 destinations cover 70% of traffic to the region in 2012 as analysed in section 2 of the report.

The United Arab Emirates is particularly pivotal in drawing activity to the region as a whole. As we can see from the GaWC global connectivity measures[22], Dubai leads, followed by Abu Dhabi, Manama and Doha. However, all of the cities behind Dubai trail significantly in terms of their connectivity (see table 3.9 below) with Dubai categorised as an Alpha+ all others Beta or below. Another noteworthy feature for this region is how few cities appear in the rankings, with only nine appearing in the broad alpha to gamma range; suggesting that other cities in the region are very poorly connected to the networks of large global firms.

With high levels of ex-patriot workforces hailing from Western locations, including the UK, leisure traffic with the Middle East has increased over recent years - as such a healthy market of travel for purposes of visiting friends and relatives is expected. In addition, many destinations in the Middle East now directly market themselves as leisure destinations in their own right, either as a dedicated trip or as part of a stop-over on route to traditional leisure destinations in Asia. With development in the Middle East ongoing, this trend could be expected to continue, albeit balanced against concerns with political stability in the region generally.

[22] GaWC (2011), 'The World According to GaWC 2010'

Table 3.9 GaWC city integration rankings:

City	Ranking	City	Ranking
Dubai	Alpha +	Jeddah	Gamma +
Riyadh	Beta	Amman	Gamma +
Abu Dhabi	Beta -	Kuwait	Gamma +
Manama (Bahrain)	Beta -	Muscat	Gamma -
Doha (Qatar)	Gamma +		

Source: GaWC Research Network

3.5.2. Trends to 2040

PwC's World in 2050 model[23] includes Saudi Arabia, and it anticipates that as we head toward 2050, Saudi Arabia has the potential to grow at approximately 4% per annum, a growth rate that translates into its economy doubling in size around every 18 years. Long-term forecasts for other small countries in the region are not readily available as most of the long-term forecasts focus on the largest global economies. The performance of many oil-rich Middle-Eastern nations will depend on the effective deployment of natural resources to develop other industries. There is also a need to avoid conflict and strengthen legal and economic institutions to make sure the investment environment is as fertile as possible.

For some of the larger cities in the region GDP forecasts out to 2025 are generated by PwC[24], as shown in table 3.10 below. Tehran and Riyadh are both expected to climb up the world rankings between 2008 and 2025, while the other three cities remain broadly static relative to their global competitors. Therefore, it is not expected that these smaller cities will make much headway on closing the gap to the bigger cities in the region by 2040.

Table 3.10 Middle Eastern city GDP rankings in 2008 and 2025

City	GDP 2008 ($bn at PPP)	Rank 2008	GDP 2025 ($bn at 2008 PPP)	Rank 2025	% change in GDP (2008-2025)	Change in rank
Tehran	127	47	252	41	98%	+6
Riyadh	107	60	214	49	100%	+11
Jeddah	72	81	143	78	99%	+3
Baghdad	24	136	56	135	133%	+1
Kabul	14	143	41	142	193%	+1

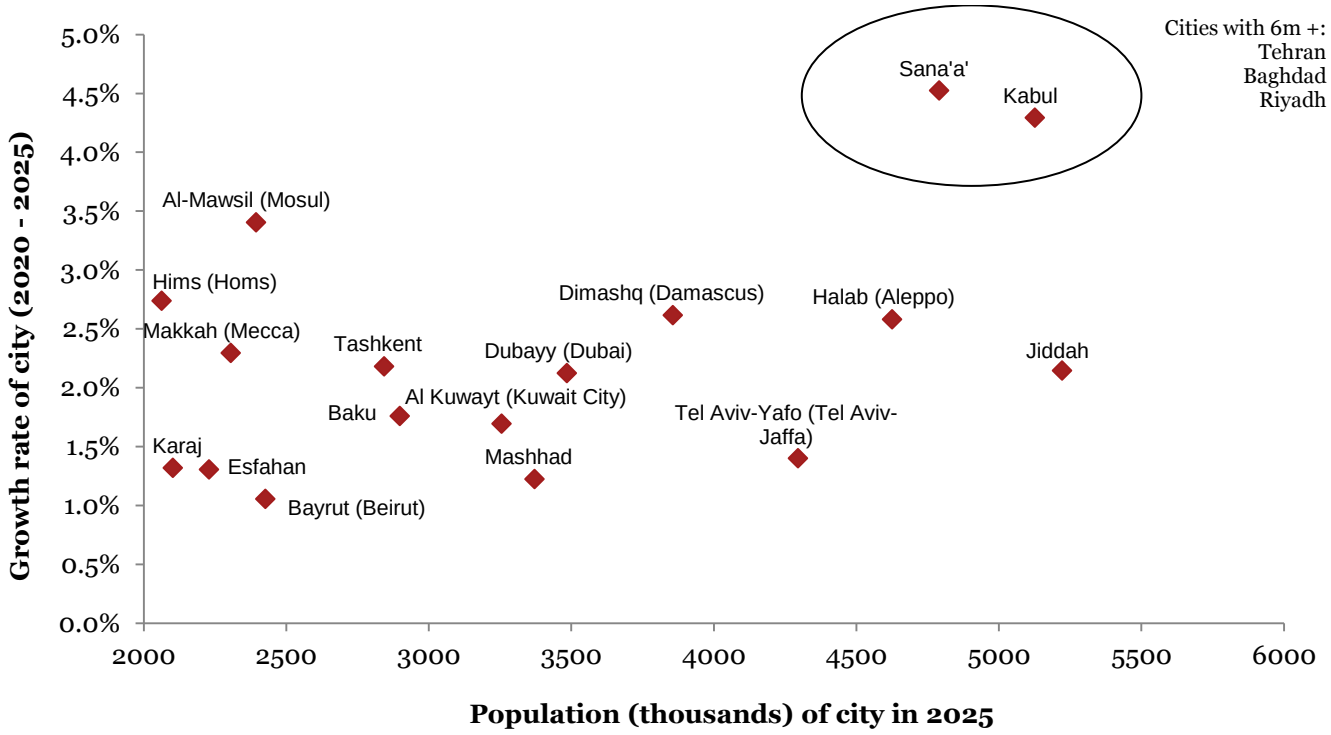
Source: PwC Global City GDP rankings (2008 – 2025)

The concentration of the region's activity into just a handful of cities also looks set to continue when viewed through the lens of the projected demographics for the region. Figure 3.8 below plots the predicted population in 2025 of cities in the region against their growth rate in the preceding five years. We can see that only three cities, Tehran, Baghdad and Riyadh have populations over 6m by 2025, while only a few more are expected to have populations of over 3m. Therefore, based on this evidence it is hard to see any rapidly emerging cities that significantly influence the current structure within the region, with the exception of any large new resource

[23] PwC (2013), 'World in 2050: The BRICs and beyond: prospects, challenges and opportunities'
[24] PwC (2009), 'Global City GDP rankings 2008-2025'

discoveries or serious conflict between now and 2040.However, both Sana'a and Kabul stand out as they look set to have rapid population growth as we head towards 2040.

Figure 3.8 Population size in 2025 and growth rate between 2020 and 2025 of Middle Eastern cities



Source: UN population data, PwC Analysis

3.5.1. Viewpoint in 2040

Combining the evidence presented in Section 2 and the projections and observations drawn from our literature review, we now try to develop a picture of which countries and cities will be attractive destinations for UK air traffic in 2040.

Zone 523: Middle East

City	Country	Justification and notes
Dubai	UAE	Focal point of the region, significant global connections, highly significant as both a destination, and a hub.
Doha	Qatar	Resource rich, well connected capital of Qatar.
Abu Dhabi	UAE	Resource rich, well connected UAE city.
Bahrain	Bahrain	Resource rich well connected city.
Riyadh	Saudi Arabia	Large city with good connectivity and large current traffic.
Jeddah	Saudi Arabia	One of the better connected cities in the region.
Kuwait	Kuwait	Resource rich with good connectivity.

Amman	Jordan	One of the best connectivity for the region.
Muscat	Oman	One of the best connectivity for the region.
Tehran	Iran	Strong population base and predicted to move up the world GDP rankings.
Kabul	Afghanistan	Very strong demographics with population growth set to boom.
Sanaa	Yemen	Set to be the fastest growing city in terms of population between 2020 and 2025.
Aleppo	Syria	Another large city in the region although current UK traffic to the city is weak.
Damascus	Syria	Another important city in the region with promising demographics, viability for air routes in 2040 will depend on speed of recovery post-conflict.
Beirut	Lebanon	Attracts some UK air traffic at present.
Dammam	Saudi Arabia	Attracts some UK air traffic at present.

3.6. Australasia: Business as Usual

Australasia is the simplest of the DfT regions under consideration. The zone has a low number of large cities and is a mature developed market – as such, very few, if any developments in terms of emerging destinations are expected. As table 3.11 below shows, there are only six cities in the region with more than a million people in them. Furthermore, they are all predicted to grow at a consistent and steady rate to 2025 as shown by the narrow range of the compound annual growth rate in population (CAGR) numbers.

Traffic will continue to be a balance of leisure and business, supported by historical ties and the general affluence of both Australasia and the UK. Migrant labour is also likely to drive continued strength of leisure travel for visiting friends and relatives in both directions.

Table 3.11 Australasian cities with more than 1m population

City	Population 2010 (thousands)	Population 2025 (thousands)	CAGR
Adelaide	1,181	1,535	1.76%
Brisbane	1,993	2,627	1.86%
Melbourne	3,896	4,962	1.63%
Perth	1,617	2,121	1.82%
Sydney	4,479	5,646	1.56%
Auckland	1,407	1,886	1.97%

Source: UN population data, PwC Analysis

Therefore, all the cities above should be included in future forecasts for the region along with new entrants Christchurch and Wellington as potential additional options to ensure that marginal cities that may develop as destinations are included, however remote. As a result, the following list provides suggested destinations for Australasia:

Zone 526: Australasia

City	Country	Justification and notes
Sydney	Australia	Established as the major UK destination in this region.
Melbourne	Australia	Second largest city with a well-established traffic base.
Auckland	New Zealand	The main hub for UK traffic to New Zealand and the highest ranked city in New Zealand on GaWC's connectivity index.
Perth	Australia	The main city in Western Australia unlikely to see a significant drop in current air traffic levels.
Brisbane	Australia	Not one of the major cities but has decent traffic history.
Adelaide	Australia	Smaller city that is included to ensure full coverage.
Wellington	New Zealand	Small flows at current but included for completeness.
Christchurch	New Zealand	Small flows at current but included for completeness.

3.7. Far East: the new economic centre of gravity

The Far East is one of the most challenging regions to study because of the number of countries and cities it covers that are experiencing some very dynamic changes. Over the past few years, the region has continued to grow strongly whilst much of the developed world has experienced a prolonged economic stagnation. While rapid growth and urbanisation offer many opportunities for air travel expansion, they also offer challenges to governments in those countries. In this section of the report, we focus on the potential of these countries and cities, however realising this potential all the way to 2040 might prove challenging. We will also need to take into account the diversity of countries across the region when settling on the most likely destinations for UK traffic routes. While a country with a young workforce and rapid urbanisation such as Vietnam may offer great opportunities for manufacturing and other business links, other countries in the region that are further along the development chain may be attractive air routes for other reasons. For example, as China's already large upper and middle classes expand to 2040 there might be increased leisure traffic between China and the UK. Therefore, in this section we consider a wide range of evidence to reflect this regional heterogeneity.

3.7.1. Viewpoint in 2013

Based on past growth rates the Asian Development Bank divides the region up into three groups[25]. There are seven economies that have grown rapidly, avoiding the middle-income trap, these are Brunei, Hong-Kong, Korea, Macau, Singapore, Taipei and Japan. A second group has reached middle-income group status such as China, Indonesia, Vietnam, Cambodia and Malaysia. The final group has achieved low or modest income growth and they are of less concern to us here as the air traffic in 2040 is likely to be dominated by the first two groups.

[25] Asian Development Bank (2011), 'Asia 2025: Realizing the Asian Century'

Focusing now on how cities rather than whole countries currently fit into the global picture, we again look at the GaWC's city connectivity rankings[26] as shown in table 3.12 below.

Table 3.12 GaWC city integration rankings

City	Ranking	City	Ranking
Hong Kong	Alpha +	Bangkok	Alpha -
Singapore	Alpha +	Taipei	Alpha -
Tokyo	Alpha +	Manila	Beta +
Shanghai	Alpha +	Guangzhou	Beta
Beijing	Alpha	Ho Chi Min City	Beta
Kuala Lumpur	Alpha	Shenzhen	Beta -
Seoul	Alpha	Osaka	Beta -
Jakarta	Alpha	Hanoi	Gamma +

Source: GaWC Research Network

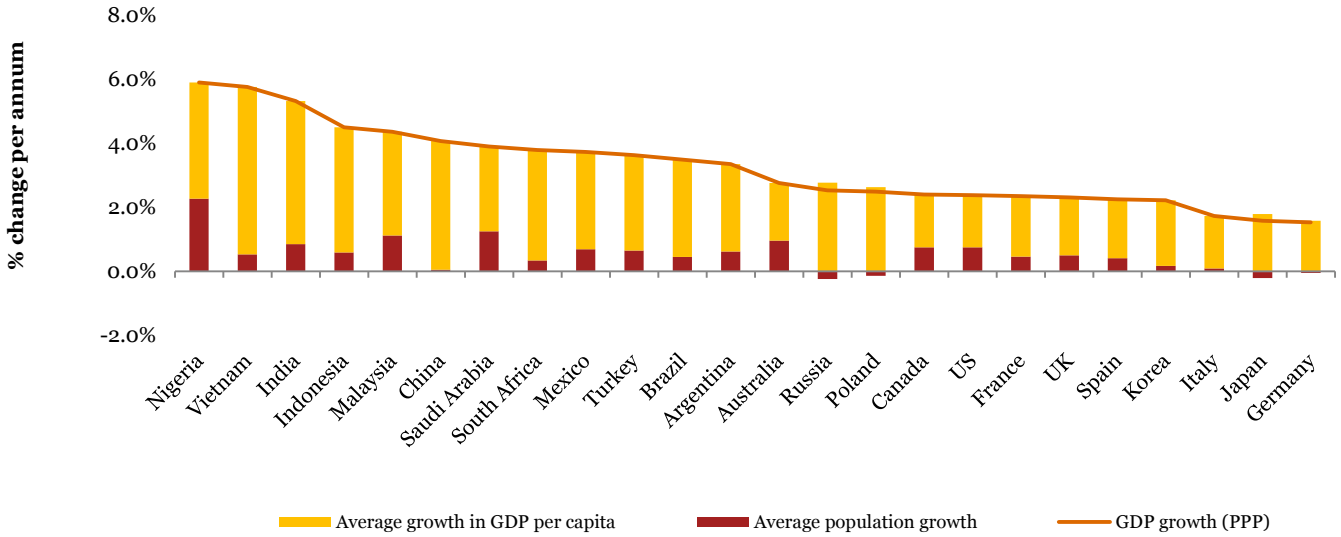
The striking feature about the connectivity of cities in this region is how many are highly integrated into the global business network compared with other regions. Sixteen cities in the region are highly likely to have significant amounts of UK air traffic due to links to businesses in cities in London, regardless of any extra leisure traffic they might also attract or generate. However, as we look ahead to 2040 in the subsection below, if strong growth continues we might expect many more cities to appear on this list, especially in China.

3.7.2. Trends to 2040

We begin by looking at country trends to 2040 before moving to a more granular city level analysis. PwC's World in 2050 publication[27] forecasts growth rates for major economies out to 2050, and these are shown in figure 3.9 below. As we can see some countries in the Far East region feature prominently in the estimates.

[26] GaWC (2011), 'The World According to GaWC 2010'
[27] PwC (2013), 'World in 2050: The BRICs and beyond: prospects, challenges and opportunities'

Figure 3.9 Breakdown of components of average real growth in GDP at PPP (2011-50)



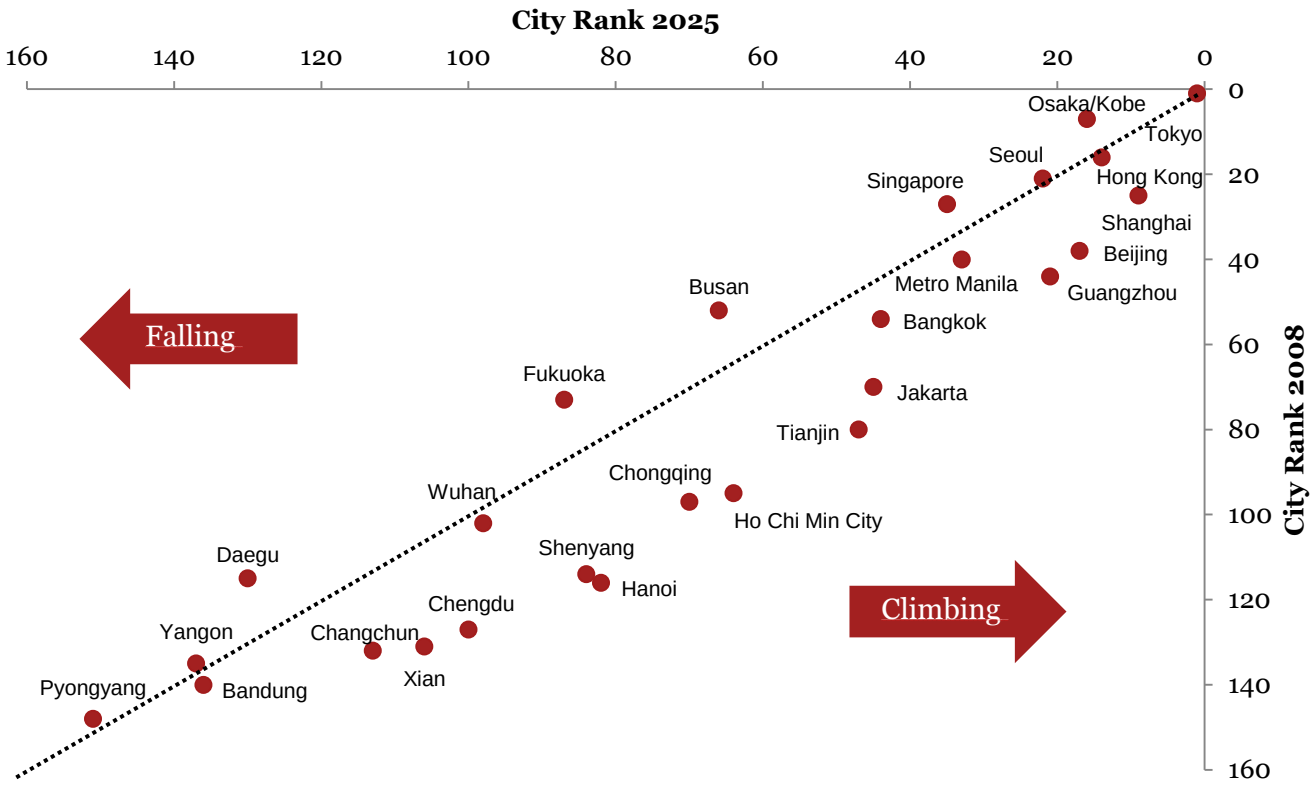
Source: PwC World in 2050

Vietnam has the potential to be the second fastest growing economy between 2011 and 2050 with a growth potential close to 6% per annum, while Indonesia, Malaysia and China are not far behind with 4%-5% average growth rates. The more developed markets of Korea and Japan are anticipated to have relatively slower growth over the period. These forecasts show that we need to be aware of how dynamic the economy of the Far East is going to be between now and 2040, and that by then the weightings of trade in the region could have redistributed significantly to new upcoming countries.

Moving down to the city forecast level[28] in figure 3.9 below, we can see a large cluster of cities right at the top of the rankings in the top right-hand corner, with Tokyo holding its top spot as the city with the largest GDP to 2025. Japan's other very large city, Osaka, features high up the rankings although it is expect to lose its currently high position to fast growing cities by 2025. A whole host of Chinese cities also feature very high up such as Shanghai and also some lesser known names are potentially set to perform very strongly such as Guangzhou, Tianjin and Chongqing. Another stand out feature of the figure is the strong performance of cities in the countries expected to grow fastest, such as Hanoi in Vietnam and Jakarta in Indonesia. Lastly, Manila ranks very highly and is expected to climb between 2008 and 2025 as the Philippines economy remains buoyant.

[28] PwC (2009), 'Global City GDP rankings 2008-2025'

Figure 3.9 Far East city GDP rankings in 2008 and 2025



Source: PwC Global City GDP rankings (2008 – 2025)

Staying at the city level we now look at the demographics of the more marginal cities in the region, as we can be confident that megacities will attract substantial traffic. In figure 3.10 below, we focus on cities with less than 12.5m inhabitants by 2025. This analysis reveals that cities such as Chengdu, Guangdong, Foshan, Bangkok and Tainjin all have strong demographic foundations and similar growth rates by 2020 to 2025. It also shows the marked difference between cities in the emerging and developed economies, as by 2020 – 2025 Osaka and Seoul are expected to have a virtually stagnant population while Ho Chi Minh City in Vietnam is expected to be growing at over 2.5% per annum.

Figure 3.10 Population size in 2025 and growth rate between 2020 and 2025 of Far East cities

Source: UN population data, PwC Analysis

Another area we are interested in, when looking at the likelihood of air travel between the UK and Far Eastern cities, is the purchasing power of citizens across the Far East. The Asian Development Bank's report on Asia in 2050[29] produces some estimates at the country level for both middle and upper class populations[30] by country which are reproduced in table 3.13 below. The figure of 190m classified as 'upper class' in China by 2050 emphasises the considerable potential for air travel to grow in the region and represents an opportunity for more China to UK air traffic for leisure as a growing number of Chinese citizens have enough disposable income to spend on travelling globally. Another interesting result of these projections is that Indonesia's upper class could be the same size as Japan's by 2050, highlighting the potential re-balancing of income in the region over the coming decades.

Table 3.13 Middle and upper class population by Far Eastern country in 2050

Country	Middle class population (m)	Upper class population (m)
China	1,240	190
Indonesia	250	40
Japan	60	40
Korea	10	35
Vietnam	100	15

Source: Asian Development Bank

[29] Asian Development Bank (2011), 'Asia 2025: Realizing the Asian Century'

[30] Middle Class refers to those living in households spending between $10 and $100 a day in purchasing power parity terms.

McKinsey[31] look at something similar to the table above, but at a city level, which is useful for our purposes in this report. They examine the top 20 hot spots for elderly high-income consumers by 2030, and these include many cities in the Far East region, such as Shanghai, Beijing, Tianjin, Chongqing, Nanjing, Wuhan, Shenyang and Guangzhou in China, Osaka and Tokyo in Japan, as well as Hong Kong and Seoul. Therefore, it is these countries and cities we need to pay attention to when looking at demand for travel to the UK from the Far East, rather than looking at it from a one directional perspective.

Lastly, we conclude our section on trends to 2040, by looking at the trends the manufactures are projecting. Airbus[32], in their projections of the top 20 airports by 2031, thinks that 7 of these 20 could lie within the Far East region. These seven are Hong Kong, Shanghai, Beijing, Seoul (Incheon), Tokyo (Narita), Bangkok and Singapore. Therefore, we would expect that these cities could play a prominent role in terms of traffic proportions. Boeing also conduct a similar analysis[33] out to 2031, and their projections suggest that the China to Europe traffic growth, as measured by RPKs, will grow faster between 2011 and 2031 than the South East Asia to Europe traffic by 1.4% extra per year. This suggests that slightly more weight should be placed on Chinese cities when looking at UK traffic to the Far East in 2040.

3.7.3. Viewpoint in 2040

Combining the evidence presented in Section 2 and the projections and observations drawn from our literature review, we now try to develop a picture of which countries and cities will be attractive destinations for UK air traffic in 2040.

Zone 525: Far East

City	Country	Justification and notes
Hong Kong	China PR	Pivotal hub in the region, with excellent connectivity.
Singapore	Singapore	Strongly established air links and excellent connectivity.
Tokyo (Narita and Haneda)	Japan	World's largest city in terms of GDP.
Beijing	China PR	Megacity in China with growing upper class and high connectivity.
Shanghai	China PR	Megacity in China with growing upper class and high connectivity.
Kuala Lumpur	Malaysia	Excellent connectivity and very strong traffic foundations.
Bangkok	Thailand	Population of well over 10m by 2025, strong tourism and connectivity.
Seoul	S.Korea	Pivotal city in South Korea, matured relative to other cities in the region but robust traffic base not expected to decline.
Taipei	China PR	Small city relative to other key cities but strongly established business links.
Osaka	Japan	Mature Japanese with little growth predicted but still has a large population and industrial base.
Ho Chi Minh	Vietnam	Rapidly growing city even compared to Far Eastern peers.

[31] McKinsey Global Institute (2012), 'Urban World: Cities and the rise of the consuming class'
[32] Airbus (2012), 'Navigating the Future: Global Market Forecast 2012 – 2031'
[33] Boeing (2012), 'Current Market Outlook 2012 – 2031'

City		
Hanoi	Vietnam	Major city in the rapidly expanding Vietnam, decent connectivity already and as a city it's projected to climb significantly up the world rankings.
Phuket	Thailand	Strong leisure traffic from the UK that has grown strongly over the last decade.
Manila	Philippines	Megacity with good connectivity and will climb up city rankings between 2008 and 2025.
Guangzhou	China PR	Has become one the major cities in China, large population, strong connectivity and forecast to grow. Clustered near Hong Kong.
Maldives (Male International)	Maldives	Expected to maintain strong leisure traffic from the UK. However, possible global warming impacts by 2040.
Shenzhen	China PR	Large population with good connectivity. Clustered near Hong Kong.
Wuhan	China PR	Forecast to be a megacity, however not growing as fast as some other cities. Also a top spot for high-income elderly consumers by 2030.
Chongqing	China PR	Hot spot for elderly high-income consumers in 2030, predicted to grow rapidly with an already huge population base. Inland location.
Honolulu	USA	Popular leisure destination.
Denpasar (Bali)	Indonesia	Leisure traffic meant this destination was in the top 20 Far East destinations in 2012, but numbers have been on a steady downward trend.
Kathmandu	Nepal	Significantly traffic base at current that has been growing very fast over the last decade.
Bandar Seri Begawan	Brunei	Capital of Brunei, but has seen consistently falling traffic in recent years. Therefore could be a questionable inclusion.
Koh Samui	Thailand	Leisure destination in Thailand that has experience growing traffic flows.
Chengdu	China PR	Likely to be a megacity by 2040 and between 2008 and 2025 is projected to grow robustly in terms of GDP. Inland location.
Tianjin	China PR	Very rapidly expanding megacity and by 2040 there could be many high-income consumers with disposable income to travel.
Dongguan (Guangdong)	China PR	Large population, predicted to grow rapidly. Clustered near Hong Kong.
Nanjing	China PR	Smaller than many other Chinese cities. Relatively close to Shanghai.
Jakarta	Indonesia	Rapidly growing megacity, Indonesia expected to have rapid expansion to 2040.

3.8. Indian Subcontinent: driving global population forward

The Indian Subcontinent region captures not just India but also Pakistan, Bangladesh and Sri Lanka. This region corresponds to the DfT's zone 524. The region contains many large cities and is forecast to have 9 megacities of over 10 million people by 2025. These cities are also forecast to be growing fast in terms of GDP growth. Almost all of the large cities in the Indian Subcontinent region are rising up the rankings of cities by their GDP, as the region outpaces the global average growth rate until 2025 and beyond to 2040. India in particular is forecast to grow rapidly, PwC's world in 2050 estimates[34] anticipate that India will be the third fastest growing economy in the world between 2011 and 2050, trailing only behind Nigeria and Vietnam.

As with the other developing countries key indicators for air demand are the rate of urbanisation, GDP growth and how well cities are integrated into the world city network, a good proxy for business air traffic. Furthermore, towards 2040, India will have developed an even more substantial middle-class that will have disposable income for air travel to the UK for tourism or study for example, and we need to consider where in the region this type of activity is likely to be most concentrated.

3.8.1. Viewpoint in 2013

GDP growth in India has been very rapid over the last 20 years, outpacing the average countries growth rate significantly as they have closed the gap to developed countries. However, we are interested in which specific cities have been flourishing and which offer the best potential for air travel routes to and from the UK. To do so we start by looking at which cities are most connected to the global network of cities as ranked by GaWC[35]. We look at this because it can be used as a proxy for the likelihood of air traffic routes opening up due to the strength of business links with other key cities such as London or Birmingham. The rankings are shown below in table 3.14.

Table 3.14 GaWC city integration rankings:

City	Ranking	City	Ranking
Mumbai	Alpha	Lahore	Gamma +
New Delhi	Alpha -	Hyderabad	Gamma +
Bangalore	Beta +	Pune	Gamma -
Chennai	Beta	Colombo	Gamma -
Karachi	Beta	Islamabad	Gamma -
Calcutta	Beta -	Ahmedabad	High Sufficiency

Source: GaWC Research Network

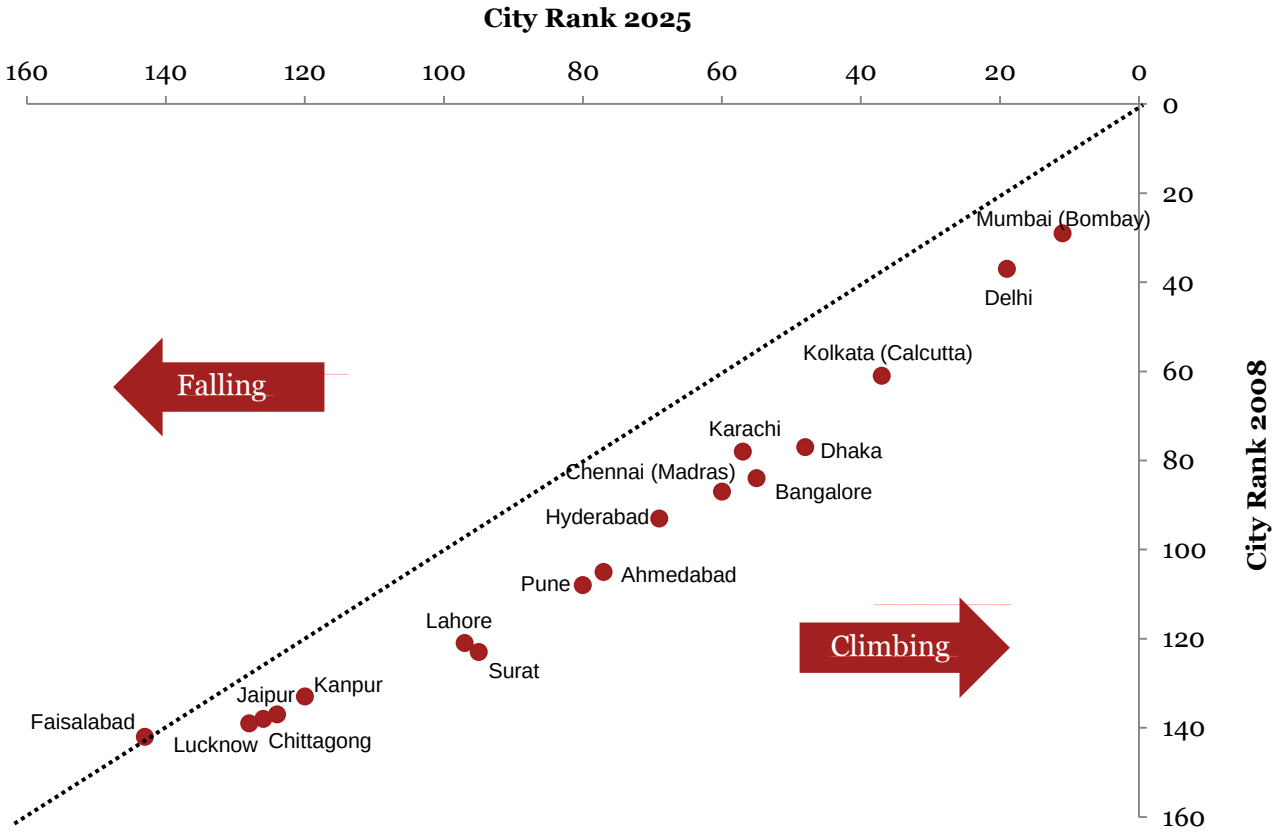
As we might have expected Mumbai and New Delhi have the highest measures of connectivity to other global cities and given their size it is no wonder that they are currently the two biggest traffic destinations in the region to and from the UK. Combining these two cities they constituted 32% of all UK to Indian Subcontinent air traffic in 2012. We can see as well that other cities outside India are also important such as Karachi, Colombo and Islamabad, however, on this ranking we note that Dhaka in Bangladesh features very low down the list in the 'sufficiency' category despite its large size.

[34] PwC (2013), 'World in 2050: The BRICs and beyond: prospects, challenges and opportunities'
[35] GaWC (2011), 'The World According to GaWC 2010'

3.8.2. Trends to 2040

We begin with a comparison of how Indian cities rank according to GDP between 2008 and 2025 using PwC's city GDP forecast[36]. As shown in figure 3.11 below the first thing to note is a consistent trend of cities in this region climbing up the world city rankings to 2025. It also seems that many of them will be climbing the rankings at a similar pace, where the average city appears to be climbing around 20 places between 2008 and 2025. The figure also focuses our attention on some of the smaller cities in the region that can perhaps be overshadowed by the megacities but could offer viable air traffic opportunities by 2040, examples are Lucknow, Chittagong, Jaipur and Kanpur. The two biggest movers out of the group are Dhaka and Bangalore jumping by around 30 places, therefore, if they could sustain this impressive progress to 2040 we could see their weight in the region increasing significantly from today's levels.

Figure 3.11 Indian Subcontinent city GDP rankings in 2008 and 2025



Source: PwC Global City GDP rankings (2008 – 2025)

As with the African and Far Eastern regions where development is progressing at a rapid pace, urbanisation is another key measure we should be considering to determine which cities will be most influential by 2040. In figure 3.12 below we restrict our focus to cities with more than 4m population as forecast to 2025 to concentrate on the largest key agglomerations. As we can see there seems to be a clear trend in the region between city size and city growth, with those cities closer to 4-5m in population in 2025 forecast to be growing closer to 3% while the largest cities such as Delhi and Mumbai are forecast to be growing at closer to 2.3-2.4%. This indicates that there will be a degree of catch-up between mid-sized cities and the largest metropolises. One feature of note is that our sources present a consistent list of emerging cities. To check that these cities are the best possible list we now turn to further sources of information on the region.

[36] PwC (2009), 'Global City GDP rankings 2008-2025'

McKinsey in their review of India's cities[37] forecast that by 2030 some of the country's largest metro regions will become the size of many countries today. For example, they anticipate that Mumbai's GDP could be larger than Portugal's current level, highlighting the scale of expansion in Indian cities and how some of the cities that are relatively small for India could offer vast economic potential and could justify air links of their own. Furthermore, India will have 68 cities with populations of more than one million each by 2030, up from 42 today.[38]

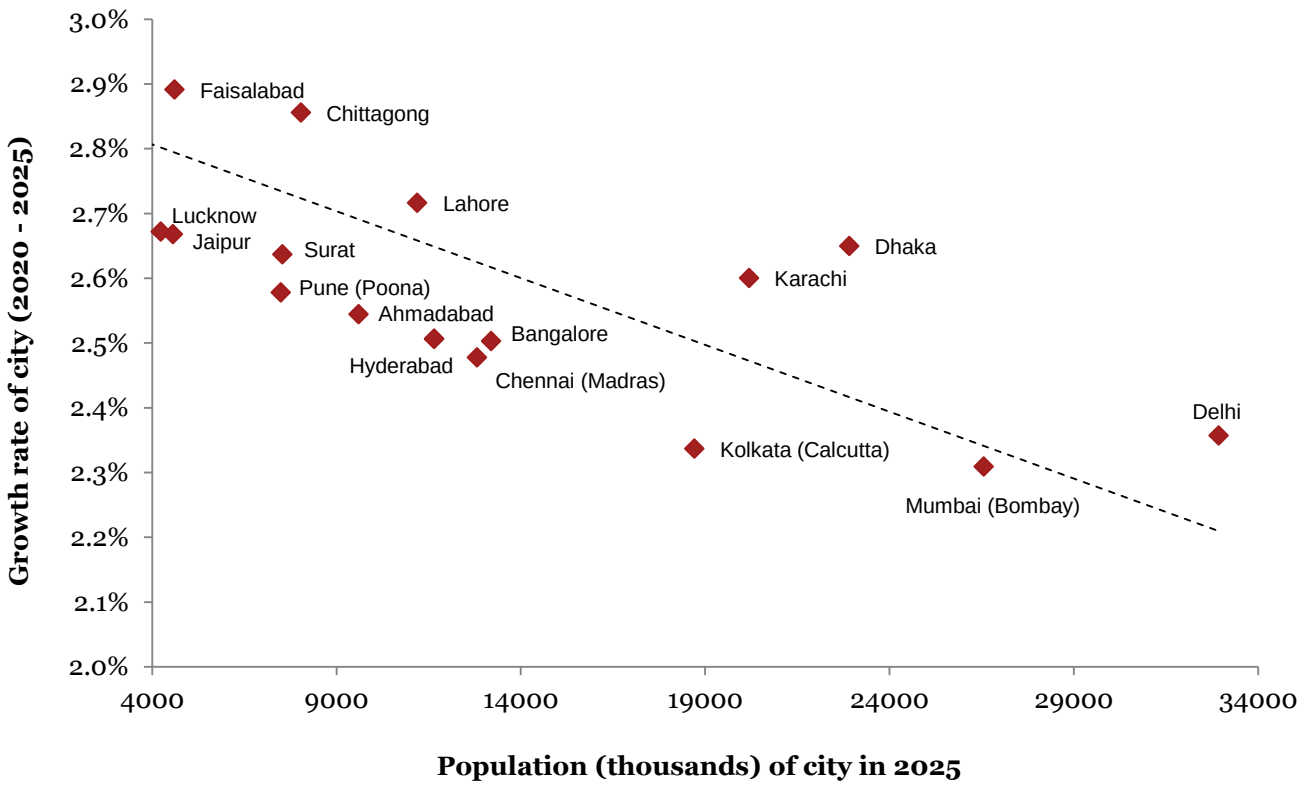
McKinsey specifically highlighted thirteen cities that they expect to have a population of more than 4 million by 2030 and some of these cities were not part of our analysis in figure 3.12. These are Vadodara, Nagpur and Kanpur. In another report[39] they also highlighted 20 hot spots for growth by 2025 for several categories, one of which was elderly high-income consumers. The four Indian subcontinent cities of Mumbai, Delhi, Kolkata and Ahmedabad featured in this list. We are concerned with these elderly high-income consumers because they offer a potential boost to UK tourism.

Taking a cluster-based approach to viewing India, the same report identified 12 cluster regions and highlighted core cities in each one. This analysis suggested that some lesser known Indian cities such as Kanpur, Jaipur, Visakapatnam, Surat, Nagpur, Vadodara and Chandigarh could be core cities. As more companies expand operations to India these cities could be strategic hubs for business.

Lastly, we look to aerospace manufacturers to see whether they have an opinion on which Indian Subcontinent routes are likely to grow in the future. Airbus's analysis[40] draws our attention to the positive correlation between propensity to travel and urbanisation. They then go on to highlight cities that can be classed as aviation megacities by 2031, five of these lie in our region including Mumbai, New Delhi, Bangalore, Colombo and Dhaka. However, no airport in the Indian subcontinent region is predicted to be a top 20 airport in terms of RPKs generated by 2031, so while some routes are likely to see a higher concentration than others, we expect that there won't be a dramatic skew towards any airports in particular.

[37] McKinsey Global Institute (2010), 'India's Urban Awakening: Building Inclusive Cities, Sustaining Economic Growth'
[38] McKinsey Global Institute (2010), 'India's Urban Awakening: Building Inclusive Cities, Sustaining Economic Growth'
[39] McKinsey Global Institute (2012), 'Urban World: Cities and the rise of the consuming class'
[40] Airbus (2012), 'Navigating the Future: Global Market Forecast 2012 – 2031'

Figure 3.12 Population size in 2025 and growth rate between 2020 and 2025 of Indian Subcontinent cities



Source: UN population data, PwC Analysis

3.8.3. Viewpoint in 2040

Combining the evidence presented in Section 2 and the projections and observations drawn from our literature review, we now try to develop a picture of which countries and cities will be attractive destinations for UK air traffic in 2040.

Zone 524: Indian Subcontinent

City	Country	Justification and notes
Mumbai	India	Megacity with a large proportion of current traffic, expected to maintain this status.
Delhi	India	Megacity with a large proportion of current traffic, expected to maintain this status.
Bangalore	India	One of the largest cities in India that is expected to grow rapidly.
Islamabad	Pakistan	Good connectivity and is already the dominant airport for UK traffic to Pakistan.
Colombo	Sri Lanka	Ranks well on connectivity, contributes significantly to the UK air travel and

		is the gateway to Sri Lanka.
Lahore	Pakistan	Large city with fast urbanisation forecast and a strong foundation of air traffic.
Dhaka	Bangladesh	Largest city in Bangladesh, rapidly rising up city GDP rankings and growing traffic.
Madras (Chennai)	India	One of India's largest cities and forecast to grow well with good connectivity
Kolkata (Calcutta)	India	Very large city and scores well on all the measures above, however doesn't have a particularly strong traffic base at current.
Karachi	Pakistan	Has the best connectivity score out of all Pakistan's cities and looks encouraging demographically.
Hyderabad	India	Has experienced fast traffic growth over the last decade and has a positive outlook based on the measures above.
Ahmedabad	India	Growing elderly population with disposable income by 2030 and has decent performance on other measures.
Pune	India	Has the potential to grow rapidly with strong demographics and scored stronger than many cities on connectivity.
Amritsar	India	Robust traffic base at current as is the spiritual centre for Sikhs.
Cochin	India	Major port city with a larger share of current traffic than many much larger cities.
Surat	India	Has the potential to grow rapidly with strong demographic, featured strongly in the city GDP forecasts and accounts for a large portion of India's textiles industry.
Kanpur	India	Potential to be a cluster core city. Projected to climb up the city GDP rankings.
Nagpur	India	Potential to be a cluster core city
Jaipur	India	Potential to be a cluster core city. Projected to climb up the city GDP rankings.
Visakapatnam	India	Potential to be a cluster core city

4. Economic Considerations

4.1. Overview

This section provides a commentary on the development of the aviation sector in general, along with specific changes in the functioning of the sector that may impact upon the way the sector develops in future. This section is not constrained to the zones of interest, and lessons are identified from numerous geographies to be applied to the zones being considered.

4.2. European growth, and LCC dominance

Despite the capacity limitations at certain airports, the network of air routes to/from the UK has expanded over the past decade or so. As figure 4.1 below shows, the number of destinations in 2012 is higher than in 2003, although the financial crisis appears to have stalled the progress in destinations. Not surprisingly, most of the new destinations served have been to Europe, especially Eastern Europe, with the expansion of the European Union and economic development. Of particular note has been the role played by low cost or no frills airlines in this respect. LCCs have made a substantial impact on European air services - low fares combined with services to smaller destinations have significantly expanded the market and forced the so-called legacy airlines to address their own cost bases, product offerings and route networks. Looking to the future, this trend is likely to continue with new Eastern Europe destinations being served, at least initially, exclusively by low cost carriers, and with legacy full service airlines fighting to compete through lowering of fares.

Figure 4.1 Number of international destinations served by UK airports

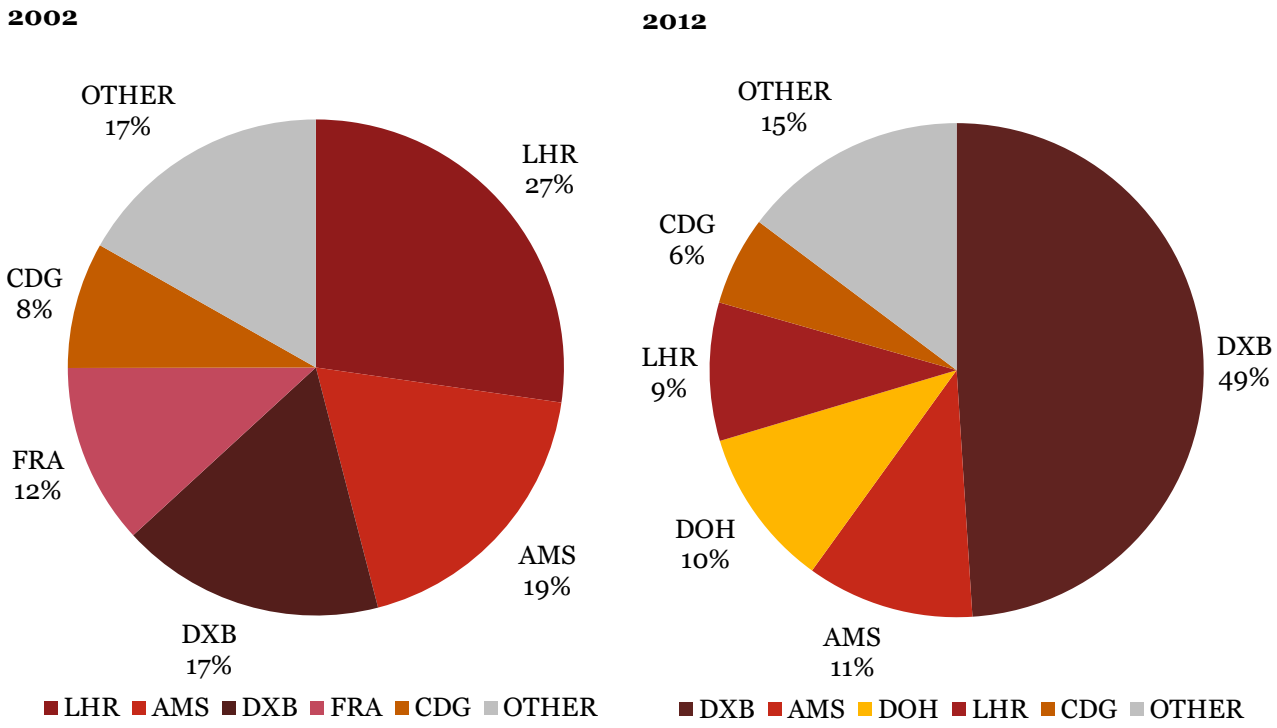
Source: SABRE data, PwC Analysis

The UK short-haul market has not only been about expansion - there has also been a marked reduction in domestic services, particularly to Heathrow, a reflection of both the use of scarce airport slots for more profitable long-haul routes and an improvement in some rail services. The number of routes and service frequencies from UK regional airports to Heathrow is substantially less than those to the major Continental European hubs such as Amsterdam, Frankfurt and Paris, although some services have been transferred to other London airports and, of course, short-haul routes to the Continent from regional airports have grown. Figure

4.2 below, shows that the first stop destinations on selected journeys[41] from UK regional airports has evolved dramatically between 2002 and 2012; Heathrow has declined substantially in terms of its share while Amsterdam and Charles de Gaulle remain 2nd and 5th most popular respectively. Over the decade Dubai has risen to prominence and dominates as the first stop on selected regional UK airport to long-haul destination journeys. This trend is likely a result of the growth in dominance of Dubai as a hub and its capture of market share of traffic travelling from UK regional airports to Asian destinations.

In terms of future destinations, this clearly demonstrates the importance of Dubai as a global hub – further, with airport expansion underway at Dubai, traffic is likely to continue to be drawn over Dubai on journeys to Asia.

Figure 4.2 First stops destinations from regional UK airports in 2002 and 2012 (Top 10 destinations)



Source: SABRE Data, PwC Analysis

4.3. Long haul considerations – Dubai, the North Atlantic, and India

For long-haul routes it is important to differentiate between mature and upcoming markets – observation of mature markets today can provide a perspective on how emerging markets will develop and what will happen once they reach maturity. On the more mature North Atlantic route, for example, the number of destinations served has remained broadly stable since 2000/01, with if anything a small reduction - for example, the number of destinations served decreased from 28 in 2003 to 24 in 2012[42]. With new destinations coming online in Asia, Africa, and South America, the North Atlantic market suggests that once maturity is reached over the next 10 to 20 years, new destinations will cease to come online – the key question becoming when these markets will reach maturity.

[41] Selected regional airports were Birmingham, Manchester, Bristol, Edinburgh and Glasgow. Selected destination countries include India, China, Vietnam, Hong Kong, Kenya and Indonesia.
[42] Based on SABRE Data

The North American market can also be used to inform on how the airline industry adapts once a saturation point is reached. Figures 4.3 and 4.4, show the change in frequency/capacity and load factor respectively on North American routes from the UK. As can be seen in the charts, airlines adapted to the global economic crisis (or were driven to do so) by reducing capacity and frequency, but increasing load factors on individual aircraft to ensure profitability. Another explanation is that airlines may have taken the decision to focus operations on London, rather than secondary cities (higher load factors are also easier to achieve from London given the larger size of market) as restrictions on the number of carriers and services that could be operated were removed by the signature of the EU-US 'open skies' Air Transport Agreement in 2007.

For other long haul zones the patterns observed in the UK-US market demonstrate that every market has a point at which saturation is reached, i.e. a point at which new destinations are unlikely to open and focus will move to increases in capacity and frequency (see the growth in frequencies and capacity to US destinations between the years of 2003 and 2007, despite a minimal change in destinations served). Further, in times of economic difficulty, airlines tend to focus on load factor to improve profitability, as a result of an inability to gain profits from new routes (which may attract discounts to aeronautical fees), or increased frequencies. For many of the emerging long haul zones discussed in this paper, the key question becomes when this saturation point will be reached, and even more challenging, when and where the next economic crisis will occur.

Figure 4.3 Frequencies and capacity on UK to US traffic

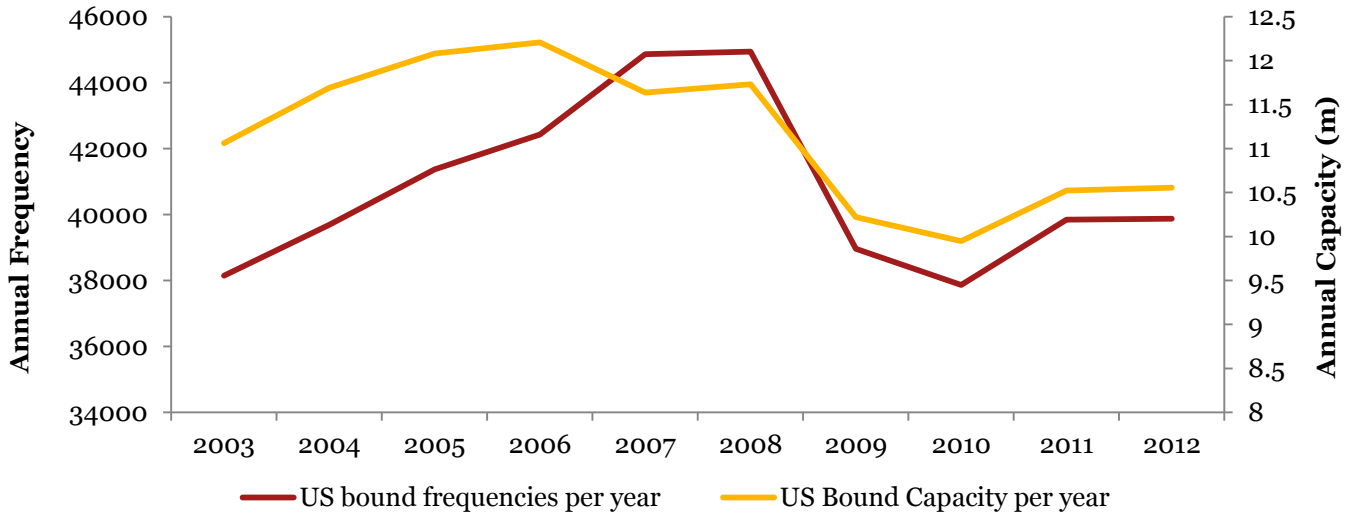
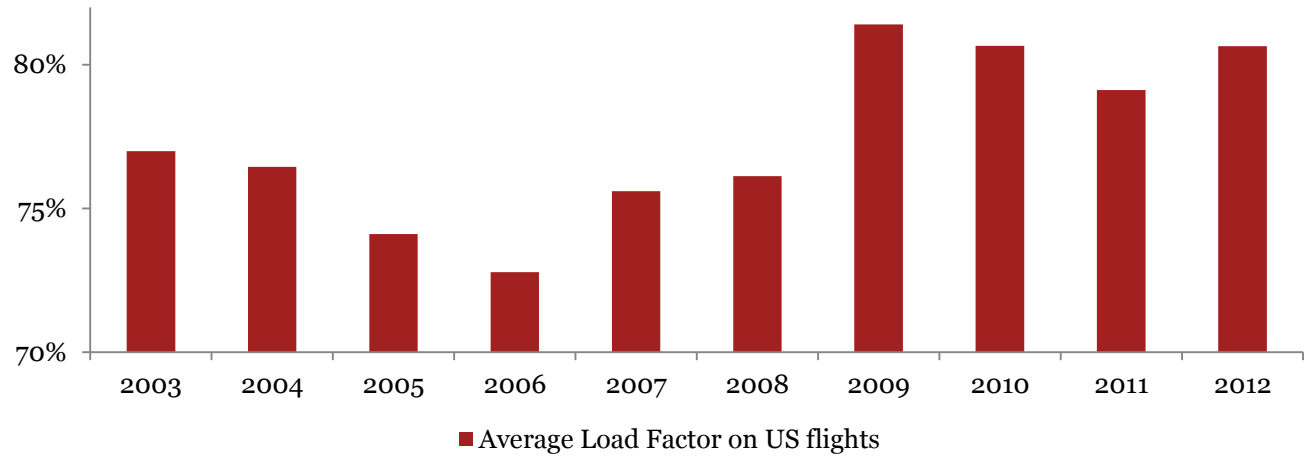


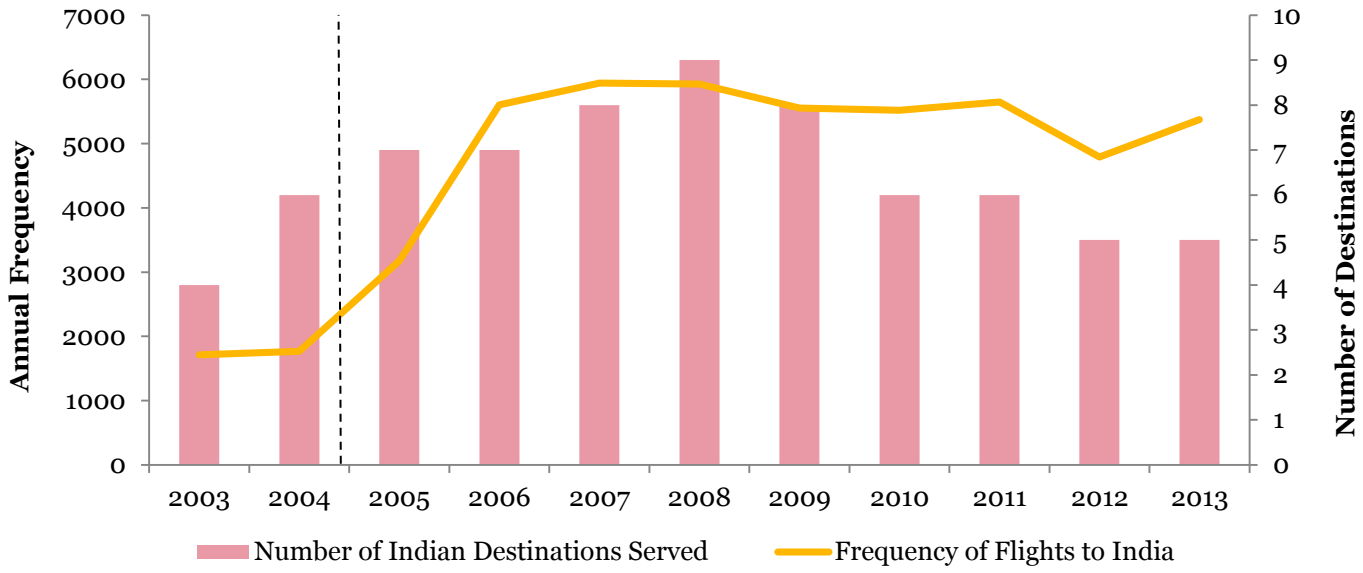
Figure 4.4 Average load factor on UK to US flights



Source: SABRE Data, PwC Analysis

The North Atlantic routes are mature both in terms of the economic development of the countries involved and of the regulatory environment governing their operation. The same cannot be said of most other long-haul markets which are still in phases of growth in line with increasing economic wealth of these destinations. There has been a marked growth in UK – India traffic, for example, since the liberalisation of the Air Services Agreement between the two countries, although the number of Indian destinations served has increased only marginally from 4 to 5 between 2003 and 2013. This can be seen in figure 4.5 below, where post-2004 when the agreement entered operation there was a surge in the frequency of UK flights to India; the number of destinations also rose following the agreement but has fallen back post financial crisis. It should be noted also that a significant proportion of the traffic now travelling on direct flights between the UK and India previously travelled indirectly via hubs in Continental Europe. Additionally, direct UK – India flights compete with the Middle East hubs which have a strong presence in India. The acquisition by Etihad of 24% of Jet Airways, and Emirates already strong market share in the country, mean that passengers can utilise the broad networks of the Middle East hubs easily and cheaply.

Figure 4.5 Trends in UK to India traffic



Source: SABRE Data, PwC Analysis

Other long-haul markets have seen a similar pattern of development as economies have expanded and regulatory shackles were removed. The recent downturn in the global economy has, of course, inevitably distorted the picture to some extent.

A significant conclusion from this analysis would appear to be that while it is reasonable to expect the inauguration of new long-haul routes from regional UK and London airports, the expansion may not match the growth in underlying traffic. The US market has shown that maturity and airline consolidation brings with it a slowing down, and even a reversal, in the growth of new routes. Even India has seen only a relatively modest increase in the number of destinations served from the UK, although that market is almost certainly some way from maturity. The UK economic, cultural and family ties with other developing economies such as China and Latin America are nowhere near as strong as with North America and India, and one would expect intermediary hubs to play a more significant role in serving the developing countries.

4.4. Factors Affecting New Destinations from the UK

Numerous other factors will affect the development of new air destinations from the UK, including:

- *Aircraft technology and range*: The non-stop range over which aircraft can operate with viable payloads has increased substantially over the years, and there is every reason to believe that this trend

will continue. Some have argued that this implies a diminution in the role of hubs, as more destinations can be served non-stop. However, if current trends continue, hub-and-spoke networks will continue to be critical. In addition, given the other benefits which hubbing procedures involve it is unlikely that such an impact will be significant.

- *Aircraft size*: Another discernible trend is that despite previous expectations, the growth in the average size of long-haul aircraft has been halted, and even reversed. The A380, the largest commercial aircraft in the world, has not yet seen the success once expected, and Boeing's rival, the B747-8, has been even less successful. Instead, we are seeing 747-400s replaced by B777s with less capacity and soon by even smaller B787s and A350s, whose costs per seat and range at least match the B747's. Again, this will permit more thin routes to be operated non-stop rather than via hubs, but such new aircraft will also improve the economics of many thinner spoke routes to hubs making it difficult to argue that changes in aircraft technology and size will undermine, or reinforce, the hub concept. For the destination served in long haul zones these changes in aircraft technology may serve to increase the number of destinations served as a result of lower operating costs arising from newer, more efficient technologies. China, for example, with many major cities all with significant levels of growth, is one geography that may see an increase in the number of destinations served from the UK (in the Far East zone China has three new destinations)

- *Fuel price and efficiency*: Along with GDP growth, the price of fuel is one of the major determinants of air traffic demand. The future price of oil is particularly difficult to forecast at present, but history would suggest that whatever it is, the airline industry will accommodate it. The very large increases in fuel price seen over recent years have had two effects. First, while reducing the *rate* of growth of air traffic, the *direction* of growth has remained broadly positive. Secondly, higher oil prices have acted as a significant incentive to reduce fuel burn by improving aircraft (and non-aircraft elements such as air traffic control) technology. Both of these effects are likely to continue in the foreseeable future.

- *Potential for IT networks to substitute for air travel*: The argument that demand for business air travel will decline with the growth of, for example, video conferencing, has been common for several decades. Unfortunately there is no evidence that, on balance, it is correct. It is certainly the case that substitution of air travel by technology does take place, especially at times of economic stress. However, it equally appears to be true that growing technological connectivity in itself generates demand for air travel. The net effect of these two countervailing influences may well be close to zero.

4.5. Summary

- Economic considerations have driven the expansion of both short and long-haul air routes to, from and within the UK over recent years, despite (and in certain respects, because of) some airport capacity constraints, and there is no reason to expect this trend to change.

- In short and medium-haul markets we are witnessing a convergence of LCC and legacy airline business models which will continue to put pressure on costs, and therefore on fares.

- For the long haul market, the expansion of the number of destinations in mature markets will slow, if it hasn't already stopped. Other markets, however, will see demand for new destinations increase, although probably not as fast as underlying passenger demand.

- The UK, and especially the South East of England, has a route network competitive with other European countries, but there are significant long-haul gaps.

- These broad conclusions are unlikely to be significantly affected by developments in aircraft technology and size, fuel price/efficiency or IT networks.

5. Conclusions and Recommendations

Now we have completed our baseline analysis, literature review and review of economic considerations we move on to offer our final lists of recommended destinations and the traffic splits between them.

5.1. Assumptions and Considerations

This section contains a set of destinations and passenger splits expected to be of significance in 2040 for nine long haul zones in the DfT model. No modelling has been completed in developing these outputs. Recognising that the DfT model is limited to 20 destinations per zone, only up to 20 destinations have traffic allocated to them, other destinations are included for completeness only.

For each recommendation we also provide the following:

- 'Confidence' rating - a rating of our confidence in the allocation of traffic, ranging from A to C and defined below.
- 'Current DfT Model Allocation' is the percentage of traffic currently used within the DfT's model and is provided to highlight significant differences with the new destinations and allocations.
- '2012 actual' is based on SABRE data (excluding LCC's traffic) and shows the actual quantity of passengers travelling to a given destination in 2012. It should be noted that comparisons between the SABRE data and the 'Current DfT Model Allocation' data are not valid as a result of various alterations made to the DfT Allocation data to counter for various limitations
- 'Average Annual Growth Rate' is the average of the year-on-year growth rates from 2002 to 2012 and is provided to show the most recent trend in passenger numbers.
- 'Annual average high and low' are the extremes of year-on-year growth rate for years 2002 to 2012 and are provided to demonstrate the volatility of the recent trends in passenger numbers.

To avoid 'false accuracy' and recognising that no modelling has been completed, passenger splits are provided as whole percentage integers only; i.e. no destination has an allocation of less than 1%.

Confidence Ratings

In addition to providing an allocation of passengers to each destination, we have provided a rating of our confidence in the accuracy of the allocation. This confidence rating is based upon numerous factors including the quantity of data and literature available on the region/destination; the previous volatility in terms of traffic volumes with the UK; the anticipated stability of region/destination in terms of politics, environment, and other demographics:

A: Relatively higher confidence in allocation assigned
B: Moderate confidence in allocation assigned
C: Lower confidence in allocation assigned

5.2. Suggested Changes to DfT Destination Lists

In this section we offer our recommendations for which cities should be included for each zone as well as offering broad traffic splits between these destinations. In doing so, we have relied upon section 2, 3 and 4 above and have conducted our analysis within the considerations and assumptions addressed in section 5.2.

5.2.1. Zone 518 – East Europe

5.2.1.1. Summary of Changes

Many destinations in Eastern Europe were identified as being suitable for UK related air traffic, but due to the focus of this analysis being solely full-service carriers, many of these destinations such as Krakow that attract substantial amounts of LCC traffic ceased to be of importance and did not receive a portion of the regional traffic. This is because many of the short-distance destinations, for instance those in Poland, are dominated by LCC airlines (Wizz Air, easyJet or Ryanair are the main ones) and we do not foresee this changing significantly by 2040. Destinations further away from the UK, or those that are major cities of the region, have a tendency to attract more full service carrier traffic (FSC), and thus are given more weight in the percentage splits allocated.

5.2.1.2. Weightings

Table 5.1 Zone 518 recommendations

City	Country	PwC Recommendations	Confidence	Current DfT Model Allocation	2012 Actual	Average annual growth rate (2002 - 2012)	Annual growth high	Annual growth low
Moscow (Domodedovo)	Russia	25%	A	21%	23%	58%	413%	-3%
Warsaw	Poland	20%	B	22%	16%	1%	17%	-34%
Moscow (Sheremetyevo)	Russia	10%	A	4%	10%	-1%	62%	-31%
Bucharest (Otopeni)	Romania	10%	B	4%	10%	5%	16%	-9%
Kiev	Ukraine	10%	B	4%	9%	9%	23%	-5%
St Petersburg	Russia	6%	B	3%	6%	4%	23%	-22%
Sofia	Bulgaria	5%	B	5%	6%	3%	27%	-32%
Ashkhabad	Turkmenistan	5%	B	3%	5%	34%	300%	-47%
Almaty	Kazakhstan	2%	C		2%	12%	68%	-27%
Tallin	Estonia	1%	C		2%	0%	38%	-44%
Minsk	Belarus	1%	C		1%	7%	17%	-4%
Tbilisi	Georgia	1%	C		1%	16%	66%	-19%
Odessa	Ukraine	1%	C		1%	18%	63%	-14%
Akmola	Kazakhstan	1%	C		1%	67%	304%	-4%
Kishinev (Chisinau)	Moldova	1%	C		1%	19%	45%	-16%
Guryev (Atyrau)	Kazakhstan	1%	C		1%	132%	1112%	-56%
Gdansk	Poland			8%	1%	9%	66%	-66%
Katowice	Poland			5%		36%	347%	-84%
Bucharest (Baneasa)	Romania			4%				
Poznan	Poland			4%		36%	317%	-86%
Riga	Latvia			3%		-10%	43%	-54%
Varna	Bulgaria			2%		92%	613%	-50%
Krakow	Poland			1%	1%	2%	51%	-80%
Wroclaw	Poland			1%		4%	80%	-62%
Baku	Azerbaijan			1%				
Vilnius	Lithuania			0%	1%	-1%	95%	-75%
Kaunas	Lithuania							
Novosibirsk	Russia							
Cluj Napoca	Romania			2%				

Timisoara	Romania			1%		8%	44%	-43%
Moscow Vnukovo	Russia				1%			

5.2.2. Zone 519 – West Africa

5.2.2.1. Summary of changes

West Africa is set to experience rapid development to 2040, with coastal cities in the region the most likely to expand fastest. Nigeria is projected to be one of the fastest growing economies in the world; therefore a key theme for this region is increased traffic to Lagos. We also try to deal with the different Cape Verde islands, by assigning a traffic proportion to the most popular island currently, as previously other islands have been the primary location.

5.2.2.2. Weightings

Table 5.2 Zone 519 recommendations

City	Country	PwC Recommendations	Confidence	Current DfT model allocations	2012 actual	Average annual growth rate (2002 - 2012)	Annual growth high	Annual growth low
Lagos	Nigeria	54%	B	46%	52%	5%	17%	-11%
Accra	Ghana	19%	B	25%	18%	5%	28%	-21%
Abuja	Nigeria	14%	B	12%	14%	16%	42%	-4%
Freetown	Sierra Leone	3%	C	4%	4%	49%	184%	-38%
Cape Verde (Boa Vista)	Cape Verde	2%	C		1%	6799%	26635%	-100%
Abidjan	Ivory Coast	2%	C		1%	11%	160%	-49%
Port Harcourt	Nigeria	2%			2%	233%	1430%	-98%
Douala	Cameroon	1%	C		1%	6%	40%	-28%
Dakar	Senegal	1%	C		1%	8%	48%	-24%
Libreville	Gabon	1%	C		1%	9%	42%	-35%
Conakry	Guinea	1%	C		1%	15%	61%	-37%
Cape Verde (Sal)	Cape Verde			10%		54%	332%	-90%
Cape Verde (Santiago)	Cape Verde					1636%	16205%	-96%
Monrovia	Liberia			3%	1%	63%	388%	-51%
Malabo	Equatorial Guinea				1%	5%	97%	-35%
Banjul	Gambia				1%	20%	261%	-89%
Ouagadougou	Burkina Faso					14%	74%	-24%
Yaounde	Cameroon					6%	34%	-11%
Kano	Nigeria					3%	40%	-33%
Ibadan	Nigeria							
Bamako	Mali					3%	26%	-28%
Hassi Messaoud	Algeria					75%	379%	-89%

5.2.3. Zone 520 – East Africa

5.2.3.1. Summary of changes

East Africa has quite a high concentration of traffic through hubs such as Nairobi and Cairo, which feed other cities within the region. We add to the DfT allocations, a percentage for the Seychelles and Alexandria, based on current traffic and Alexandria's potential to grow as a city. We exclude Hurghada and decrease Sharm El Sheikh's proportion of traffic significantly as we expect this primarily tourist destinations to be served by LCCs.

5.2.3.2. Weightings

Table 5.3 Zone 520 recommendations

City	Country	PwC Recommendations	Confidence	Current DfT model allocations	2012 actual	Average annual growth rate (2002 - 2012)	Annual growth high	Annual growth low
Nairobi	Kenya	37%	B	13%	28%	4%	42%	-19%
Cairo	Egypt	32%	B	17%	29%	1%	26%	-22%
Entebbe	Uganda	8%	C	4%	8%	4%	17%	-5%
Addis Ababa	Ethiopia	7%	C	12%	5%	11%	51%	-15%
Dar es Salaam	Tanzania	7%	C	2%	7%	5%	15%	-12%
Khartoum	Sudan	3%	C	5%	4%	13%	68%	-12%
Sharm El Sheikh	Egypt	2%	B	42%	3%	116%	947%	-88%
Alexandria	Egypt	2%	B		1%	41%	355%	-78%
Seychelles	Seychelles	1%	B		2%	-3%	19%	-22%
Kigali	Rwanda	1%	C		1%	18%	101%	-30%
Hurghada	Egypt			5%	0%	148%	891%	-96%
Mombasa	Kenya				3%	8%	127%	-32%
Zanzibar	Tanzania				1%	13%	64%	-42%
Luxor	Egypt				1%	15%	191%	-76%
Kilimanjaro	Tanzania				3%	11%	55%	-17%
Kampala	Uganda							
Marsa Alam	Egypt					12%	141%	-100%
Djibouti	Djibouti				1%	24%	61%	-35%
Mogadishu	Somalia				0%	47%	302%	-100%

5.2.4. Zone 521 – South Africa

5.2.4.1. Summary of changes

For the South Africa zone, we add four more destinations, mainly based on their ability to be served by modelled European hubs. For example, some traffic to Lilongwe in Malawi is currently channelled through Amsterdam. We also expect some traffic proportions to lesser developed nations to grow, as they catch-up to more developed economies such as South Africa.

5.2.4.2. Weightings

Table 5.4 Zone 521 recommendations

City	Country	PwC Recommendations	Confidence	Current DfT model allocations	2012 actual	Average annual growth rate (2002 - 2012)	Annual growth high	Annual growth low
Johannesburg	South Africa	44%	B	52%	36%	-2%	16%	-19%
Cape Town	South Africa	25%	A	25%	24%	-1%	28%	-24%
Mauritius	Mauritius	12%	A	13%	14%	1%	15%	-13%
Luanda	Angola	6%	C	2%	4%	24%	120%	-37%
Lusaka	Zambia	5%	C	5%	3%	4%	29%	-13%
Harare	Zimbabwe	3%	C	3%	5%	-1%	17%	-34%
Kinshasa	DRC	2%	C		1%	8%	43%	-10%
Windhoek	Namibia	1%	C		1%	6%	104%	-47%
Lilongwe	Malawi	1%	C		2%	9%	27%	-19%
Antananarivo	Madasgascar	1%	C		1%	36%	146%	-39%
Durban	South Africa				5%	-3%	17%	-12%
Port Elizabeth	South Africa				1%	-1%	29%	-16%
Gaborone	Botswana				1%	2%	30%	-12%
Maputo	Mozambique				1%	11%	50%	-10%

5.2.5. Zone 522 – Latin America

5.2.5.1. Summary of changes

In Latin America, we expect the share of traffic to tourist destinations in the region to decline and be replaced by traffic to faster growing emerging market cities. Some of this traffic we expect to hub via locations such as Sao Paulo or Bridgetown, and other traffic will be routed through European cities such as Madrid or Paris. We have allocated traffic to six new destinations, while removing four from the current DfT allocations. The four removals were mainly due to small traffic flows that are not expected to grow rapidly, or where hubbing via another airport was likely to be common. New inclusions were either major capital cities of the region, or previously excluded tourist destinations such as the Bahamas.

5.2.5.2. Weightings

Table 5.5 Zone 522 recommendations

City	Country	PwC Recommendations	Confidence	Current DfT model allocations	2012 actual	Average annual growth rate (2002 - 2012)	Annual growth high	Annual growth low
Bridgetown	Barbados	15%	A	16%	15%	3%	39%	-27%
Sao Paulo	Brazil	13%	B	7%	9%	10%	21%	-12%
Rio de Janeiro	Brazil	12%	B	3%	9%	13%	89%	-12%
Buenos Aires	Argentina	9%	B	16%	6%	7%	25%	-3%
Mexico City	Mexico	7%	B	7%	4%	0%	17%	-13%
Antigua	Antigua and Barbuda	7%	A	6%	8%	11%	77%	-38%
St.Lucia	St.Lucia	7%	A	5%	8%	9%	66%	-20%
Montego Bay	Jamaica	4%	A	4%	5%	7%	60%	-37%
Havana	Cuba	4%	A	4%	5%	7%	44%	-13%
Cancun	Mexico	4%	B		6%	59%	385%	-80%

Kingston	Jamaica	3%	A	7%	4%	-3%	43%	-25%
Bermuda	British Overseas territory	3%	A	5%	4%	2%	19%	-16%
Lima	Peru	3%	C		3%	1%	8%	-8%
Bogota	Colombia	3%	C		2%	7%	31%	-10%
Port of Spain	Trinidad & Tobago	2%	A	4%	3%	11%	76%	-28%
Caracas	Venezuela	2%	C		2%	3%	29%	-18%
Bahamas (Nassau)	Bahamas	1%	B		2%	4%	58%	-26%
Santiago	Chile	1%	C		2%	3%	11%	-12%
Grenada	Grenada			4%	2%	6%	73%	-34%
Grand Cayman	British Overseas territory			3%		0%	26%	-35%
Tobago	Trinidad & Tobago			3%		1%	60%	-48%
St.Kitts	Saint Kitts and Nevis			1%		44%	358%	-59%
Porto Alegre	Brazil					18%	40%	-2%
Belo Horizonte	Brazil					17%	58%	-28%
Monterrey	Mexico							
Guadalajara	Mexico							
Quito	Ecuador					1%	10%	-11%
Salvador	El Salvador					27%	257%	-32%
Panama City	Panama					7%	14%	-1%
Curitiba	Brazil					16%	62%	-23%
Montevideo	Uruguay					16%	34%	-6%
San Juan	Puerto Rico					1%	31%	-24%
Brasilia	Brazil					19%	46%	-14%
Guatemala City	Guatemala					3%	20%	-20%
Punta Cana	Dominican Republic					367%	2910%	-87%
San Jose	Costa Rica				2%	5%	16%	-5%

5.2.6. Zone 523 – Middle East

5.2.6.1. Summary of changes

In the Middle East we add two new destinations, which are Kabul and Sanaa based on their strong demographics. We also exclude Aleppo, which currently features in the DfT's allocation, because of very small traffic flows over the last decade and because recent conflict has increased uncertainty.

5.2.6.2. Weightings

Table 5.6 Zone 523recommendations

City	Country	PwC Recommendations	Confidence	Current DfT model allocations	2012 actual	Average annual growth rate (2002 - 2012)	Annual growth high	Annual growth low
Dubai	UAE	40%	C	38%	44%	10%	35%	-10%
Doha	Qatar	8%	B	10%	6%	9%	21%	-6%
Abu Dhabi	UAE	8%	B	9%	7%	14%	43%	-20%
Bahrain	Bahrain	5%	B	8%	3%	5%	23%	-30%

Jeddah	Saudi Arabia	8%	B	6%	7%	7%	37%	-9%
Kuwait	Kuwait	6%	B	6%	6%	10%	22%	-7%
Amman	Jordan	2%	B	4%	3%	4%	40%	-12%
Muscat	Oman	3%	B	4%	4%	4%	35%	-18%
Tehran	Iran	4%	B	4%	3%	6932%	54900%	-39%
Beirut	Lebanon	3%	B	4%	3%	9%	50%	-14%
Riyadh	Saudi Arabia	7%	B	3%	5%	12%	60%	-16%
Damascus	Syria	2%	C	2%	1%	-4%	45%	-71%
Dammam	Saudi Arabia	1%	B	2%	1%	9%	32%	-27%
Aleppo	Syria			1%	0%	1%	109%	-77%
Kabul	Afghanistan	2%	C		2%	184%	531%	-88%
Sanaa	Yemen	1%	C		0%	15%	55%	-64%

5.2.7. Zone 524 – India

5.2.7.1. Summary of changes

In India, we mostly allocate to cities that the model currently allocates to. The only addition is Cochin given its importance as a port city and taking into account the current traffic levels it receives. We also expect that traffic to Ahmedabad will hub through Mumbai or New Delhi, meaning we do not allocate this destination a percentage of traffic of its own.

5.2.7.2. Weightings

Table 5.7 Zone 524 recommendations

City	Country	PwC Recommendations	Confidence	Current DfT model allocations	2012 actual	Average annual growth rate (2002 - 2012)	Annual growth high	Annual growth low
Mumbai	India	21%	B	32%	15%	6%	27%	-14%
Delhi	India	20%	B	31%	17%	10%	24%	-4%
Islamabad	Pakistan	12%	A	9%	13%	14%	54%	-7%
Colombo	Sri Lanka	7%	B	4%	8%	8%	42%	-17%
Madras (Chennai)	India	7%	B	3%	5%	13%	35%	-14%
Dhaka	Bangladesh	7%	B	2%	6%	14%	52%	-28%
Bangalore	India	6%	B	5%	5%	30%	92%	-6%
Lahore	Pakistan	5%	B	4%	6%	11%	61%	-6%
Hyderabad	India	4%	B	3%	3%	20%	42%	-10%
Karachi	Pakistan	4%	B	0%	4%	3%	28%	-27%
Amritsar	India	4%	B	0%	4%	18%	57%	-25%
Kolkata (Calcutta)	India	2%	B	3%	2%	8%	21%	-18%
Cochin	India	1%	C		3%	62%	339%	-13%
Ahmedabad	India			3%	4%	41%	189%	-10%
Pune	India				0%	28%	182%	-29%
Surat	India				0%			
Kanpur	India				0%			
Nagpur	India				0%	37%	155%	-24%

Jaipur	India	0%	30%	99%	-34%	
Vishakhapatnam	India	0%	52%	305%	-53%	

5.2.8. Zone 525 – Far East

5.2.8.1. Summary of changes

Overall we recommend that this region includes 19 destinations, up from the 17 the current DfT model allocation uses. There are six new destinations we would include, first is Hanoi, which is set to be one of the fastest growing cities in the entire region, second is Guangzhou: which by 2040 has the potential to be one of the largest cities in the world, third is Tokyo Haneda which now shares some of the international flights to and from Tokyo with Narita, fourth and fifth are Phuket and Manila respectively, which we expect to remain a popular destination in 2040, and lastly we include Chongqing and Chengdu due to their potential to have non-stop UK links by 2040. Destinations that have been excluded are typically done so on the basis that traffic to these final destinations may be more likely to hub elsewhere in the region first. For example, traffic to Taipei could hub through Hong Kong or Guangzhou. We do note however, that this region is rapidly expanding and predicting the exact standing of such a dynamic zone by 2040 is challenging.

5.2.8.2. Weightings

Table 5.8 Zone 525 recommendations

City	Country	PwC Recommedations	Confidence	Current DfT model allocation	2012 Actual	Average annual growth rate (2002 - 2012)	Annual growth high	Annual growth low
Hong Kong	China PR	19%	B	19%	19%	4%	27%	-16%
Singapore	Singapore	12%	B	19%	13%	7%	49%	-12%
Bangkok	Thailand	12%	B	9%	14%	6%	19%	-5%
Beijing	China PR	9%	B	6%	7%	10%	33%	-21%
Kuala Lumpur	Malaysia	8%	B	11%	6%	8%	50%	-21%
Tokyo (Narita)	Japan	8%	B	16%	9%	-2%	7%	-8%
Shanghai	China PR	8%	B	3%	6%	13%	41%	-2%
Seoul	Korea (South)	5%	B	4%	6%	9%	46%	-16%
Guangzhou	China PR	3%	C		1%	31%	180%	-27%
Jakarta	Indonesia	2%	B	1%	1%	9%	26%	-8%
Ho Chi Minh City	Vietnam	2%	B	0%	1%	16%	50%	-4%
Hanoi	Vietnam	2%	B		1%	17%	38%	5%
Maldives (Male International)	Maldives	2%	B	2%	3%	20%	81%	-17%
Manila	Philippines	2%	B		4%	8%	21%	-10%
Tokyo (haneda)	Japan	1%	B		1%	191%	2081%	-51%
Denpasar (Bali)	Indonesia	1%	C	1%	1%	5%	57%	-45%
Kathmandu	Nepal	1%	C	1%	2%	17%	31%	0%
Phuket	Thailand	1%	C		2%	12%	64%	-24%
Chongqing	China PR	1%	C					
Chengdu	China PR	1%	C			33%	172%	-29%
Honolulu	USA			2%				

Taipei	China PR	2%	2%	2%	36%	-49%
Osaka	Japan	2%	1%	-1%	31%	-21%
Bandar Seri Begawan	Brunei	2%		-1%	48%	-77%
Shenzhen	China PR					
Wuhan	China PR			44%	156%	-46%
Koh Samui	Thailand			12%	34%	-9%
Tianjin	China PR					
Dongguan (Guangdong)	China PR					
Nanjing	China PR					

5.2.9. Zone 526 – Australasia

5.2.9.1. Summary of changes

We do not expect much variation from current trends at this mature and long-distance set of destinations. The main change we make is to allocate Adelaide and Wellington a percentage of traffic, this is based on Wellington's aspirations to expand its connections and the alternative routes that are on offer to Adelaide, such as hubbing through Dubai.

5.2.9.2. Weightings

Table 5.9 Zone 526 recommendations

City	Country	PwC Recommendation	Confidence	Current DfT model allocations	2012 actual	Average annual growth rate (2002 - 2012)	Annual growth high	Annual growth low
Sydney	Australia	35%	A	49%	29%	0%	8%	-8%
Melbourne	Australia	19%	A	17%	17%	2%	20%	-10%
Auckland	New Zealand	14%	A	16%	12%	1%	18%	-16%
Brisbane	Australia	11%	A	11%	12%	1%	20%	-9%
Perth	Australia	17%	A	8%	16%	3%	14%	-8%
Adelaide	Australia	2%	A		4%	4%	28%	-27%
Wellington	New Zealand	2%	B		3%	3%	29%	-45%
Christchurch	New Zealand				2%	3%	41%	-37%
Canberra	Australia				1%	23%	194%	-87%
Cairns	Australia				1%	-7%	52%	-37%

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Appendix B. - Baseline Analysis: All Traffic Types

In this appendix we present the unfiltered passenger data for all the of the DfT's long haul zones (e.g. LCCs have not been excluded). For each zone the top 20 destinations are presented alongside PAX and their share of the top 20 traffic in the region.

Zone 518 – Eastern Europe

Rank	Top 20 list	PAX 2012	PAX Traffic Splits 2012
1	Krakow	418042	11%
2	Gdansk	290848	8%
3	Warsaw	269792	7%
4	Katowice (Pyrzowice)	252197	7%
5	Riga	243972	7%
6	Wroclaw	232489	6%
7	Moscow (Domodedovo)	217914	6%
8	Sofia	216515	6%
9	Bucharest (Otopeni)	197036	5%
10	Kaunas Lt	196011	5%
11	Poznan	178165	5%
12	Vilnius	164791	5%
13	Rzeszow Jasionka	146545	4%
14	Lodz, Lodz Lublinek	138190	4%
15	Moscow (Sheremetyevo)	98984	3%
16	Tallin	94189	3%
17	Bydgoszcz	88917	2%
18	Kiev	81436	2%
19	St Petersburg	58736	2%
20	Szczecin Goleniow	52861	1%
		3637630	

Source: SABRE data, PwC Analysis

Zone 519 West Africa

Rank	Top 20 list	PAX 2012	PAX Traffic Splits 2012
1	Lagos	294740	46%
2	Accra	105334	16%
3	Abuja	78867	12%
4	Baniul	37291	6%
5	Freetown	22403	3%
6	Boa Vista (CV)	20839	3%
7	Ilha Do Sal C.Verde	13970	2%
8	Port Harcourt	13423	2%
9	Hassi Messaoud Oued Irara Apt	9350	1%
10	Abidian	7574	1%
11	Douala	7499	1%
12	Dakar	6776	1%

13	Libreville(Leon M'Ba)	4545	1%
14	Malabo Santa Isabel	4196	1%
15	Conakry	3444	1%
16	Pointe Noire	3404	1%
17	Monrovia (Roberts Int)	3250	1%
18	Unspecified, West Africa	2602	0%
19	Yaounde Nsimalen International	2460	0%
20	Ouagadougou	1438	0%

Source: SABRE data, PwC Analysis

Zone 520 East Africa

Rank	Top 20 list	PAX 2012	PAX Traffic Splits 2012
1	Sharm El Sheikh Ophira	355154	38%
2	Cairo	146740	16%
3	Nairobi	142691	15%
4	Hurghada	53189	6%
5	Entebbe	41520	4%
6	Dar Es Salaam International	37806	4%
7	Luxor	31079	3%
8	Addis Ababa	28096	3%
9	Khartoum	21600	2%
10	Mombasa Moi International	20735	2%
11	Kilimanjaro	14070	1%
12	Mahe Island Seychelles Intl	11670	1%
13	Taba	7303	1%
14	Kigali Gregoire Kayibanda	7196	1%
15	Zanzibar(Kisauni)	5192	1%
16	Marsa Alam	3720	0%
17	Borg El Arab	3421	0%
18	Juba	3139	0%
19	Asmara	2989	0%
20	Djibouti(Ambouli)	2644	0%

Zone 521 South Africa

Rank	Top 20 list	PAX 2012	PAX Traffic Splits 2012
1	Johannesburg	292577	36%
2	Cape Town	194152	24%
3	Mauritius	116220	14%
4	Harare	42907	5%
5	Durban	42528	5%
6	Luanda	31284	4%
7	Lusaka	21127	3%
8	Lilongwe	13452	2%
9	Port Elizabeth(Hf Verwoer	10932	1%
10	Windhoek	8310	1%
11	Gaborone	6237	1%
12	Kinshasa N'Djili	6194	1%
13	Maputo	5418	1%
14	Antananarivo Mg	5353	1%
15	East London(Ben Schoeman)	3464	0%

16	Livingstone	3315	0%
17	Blantyre(Chileka)	3058	0%
18	George,Za	2651	0%
19	Nelspruit	2052	0%
20	N'Dola	1917	0%

Zone 522 Latin America

Rank	Top 20 list	PAX 2012	PAX Traffic Splits 2012
1	Bridgetown	216489	17%
2	Cancun	110623	9%
3	Rio De Janeiro (Galeao)	104737	8%
4	Sao Paulo (Guarulhos)	99841	8%
5	Antigua	98530	8%
6	St Lucia (Hewanorra)	90606	7%
7	Montego Bay	66133	5%
8	Buenos Aires(Ezeiza)	64847	5%
9	Havana	60140	5%
10	Mexico City	49764	4%
11	Kingston	48682	4%
12	Bermuda Kindley Field	43168	3%
13	Port Of Spain	38303	3%
14	Lima	29826	2%
15	Grenada	24851	2%
16	Bogota	24797	2%
17	Santiago De Chile	23821	2%
18	Tobago	20523	2%
19	Nassau	17839	1%
20	Caracas	17796	1%

Zone 523 Middle East

Rank	Top 20 list	PAX 2012	PAX Traffic Splits 2012
1	Dubai	827518	43%
2	Jeddah	136511	7%
3	Abu Dhabi International	132999	7%
4	Doha	107018	6%
5	Kuwait	104185	5%
6	Riyadh	100826	5%
7	Amman Queen Alia Intl	73637	4%
8	Imam Khomieni	68984	4%
9	Muscat	68053	4%
10	Beirut	65723	3%
11	Bahrain	57380	3%
12	Baku	35891	2%
13	Amman	35027	2%
14	Kabul	28182	1%

15	Dammam	27172	1%
16	Erbil International	17720	1%
17	Baghdad Al Muthana	13575	1%
18	Damascus	9688	1%
19	Basra	9366	0%
20	Madinah Sa	9247	0%

Zone 524 India

Rank	Top 20 list	PAX 2012	PAX Traffic Splits 2012
1	Delhi	355136	17%
2	Mumbai	299823	14%
3	Islamabad	264078	13%
4	Colombo	162016	8%
5	Lahore	133061	6%
6	Dacca	129573	6%
7	Bangalore	97206	5%
8	Madras	95412	5%
9	Amritsar(Rajah Sansi)	82099	4%
10	Ahmedabad	77183	4%
11	Karachi	72373	3%
12	Goa	71549	3%
13	Cochin	68277	3%
14	Hyderabad(Begumpet)	62369	3%
15	Calcutta	40489	2%
16	Sylhet	38976	2%
17	Trivandrum	23510	1%
18	Peshawar	11629	1%
19	Calicut In	7308	0%
20	Bhui	4690	0%

Zone 525 Far East

Rank	Top 20 list	PAX 2012	PAX Traffic Splits 2012
1	Hong Kong (Chep Lap Kok)	581751	19%
2	Bangkok	438784	14%
3	Singapore	411647	13%
4	Tokyo (Narita)	275760	9%
5	Beijing	229463	7%
6	Kuala Lumpur Internationa	195079	6%
7	Shaghai Pudong International	189546	6%
8	Soeul Incheon	144973	5%
9	Manila	132298	4%
10	Male International	89115	3%
11	Taipei	59504	2%
12	Kathmandu	56835	2%
13	Phuket	47315	2%
14	Osaka	46718	1%
15	Hanoi	43783	1%
16	Jakarta (Soekarno-Hatta Intnl)	43580	1%

17	Ho Chi Minh City/Saigon	39324	1%
18	Guangzhou	38521	1%
19	Denpasar Bali	35364	1%
20	Tokyo (Haneda)	25225	1%

Zone 526 Australasia

Rank	Top 20 list	PAX 2012	PAX Traffic Splits 2012
1	Sydney	252087	29%
2	Melbourne	151113	17%
3	Perth	140499	16%
4	Brisbane	108368	12%
5	Auckland International	101780	12%
6	Adelaide	38466	4%
7	Christchurch Internationa	24930	3%
8	Wellington Nz	14476	2%
9	Cairns	7730	1%
10	Mount Pleasant (int)	7486	1%
11	Canberra	5026	1%
12	Nadi International	3753	0%
13	Darwin	3175	0%
14	Hobart Ts Au	2669	0%
15	Dunedin(Taleri)	2667	0%
16	Queenstown Frankton Intl.	2113	0%
17	Nelson	1804	0%
18	Townsville	1619	0%
19	Palmerston North	1554	0%
20	Napier/Hastings	1508	0%