

**Doc 9879**



# **Africa-Indian Ocean Regional Traffic Forecasts 2004–2020**

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**Report of the Fourth Meeting  
of the Africa-Indian Ocean Traffic  
Forecasting Group (AFI TFG)**

**Dakar, 20–24 February 2006**

**Approved by the AFI TFG and published  
by authority of the Secretary General**

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**REPORT OF THE  
AFRICA-INDIAN OCEAN  
TRAFFIC FORECASTING GROUP (AFI TFG)  
FOURTH MEETING**

(Dakar, Senegal, 20-24 February 2006)



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## 1. INTRODUCTION

1.1 The ICAO Africa-Indian Ocean Traffic Forecasting Group (AFI TFG) was set up in 1998 with the objective of developing traffic forecasts and other planning parameters in support of the planning of air navigation services in the AFI region. It has so far held four meetings in 1998, 2001, 2003 and 2006.

1.2 This report provides forecasts prepared by the fourth meeting of the AFI TFG held in Dakar, from 20 to 24 February 2006. The forecasts were developed on the basis of major route groups (region-pairs) using econometric modelling. They were then converted into aircraft movements and expanded to the city-pair level. The city-pair forecasts were then redistributed to match the areas of routing (ARs) defined by the Africa/Indian Ocean Planning and Implementation Regional Group (APIRG), which may not necessarily correspond to the region-pairs. The section related to the FIR data analysis in this report was completed by the Secretariat subsequent to the meeting.

## 2. GLOBAL TRENDS

2.1 The historical global economic and traffic trends are provided in **Appendix A**.

2.2 The global scheduled passenger traffic forecasts for 2006, 2007, 2008 and over the period to the year 2015, have been developed by the ICAO Secretariat and are based on economic and passenger yield assumptions. According to those forecasts, the general economic performance provides the main factor affecting traffic demand. Global passenger traffic measured in terms of passenger-kilometres is expected to grow by 6.1 per cent in 2006, 5.8 per cent in 2007 and 5.6 per cent in 2008. The ICAO long-term forecast over the period 2002-2015 provides for an average annual increase of 4.4 per cent.

## 3. REGIONAL TRENDS

### 3.1 Economic Trends

3.1.1 Over the 1995-2005 period, the aggregate economy of the African region grew at an average annual rate of 3.9 per cent, while GDP per capita increased at a rate of 1.6 per cent per annum in real terms. Factors such as greater macroeconomic stability, modest progress in liberalizing markets and privatizing state enterprises helped the region's improved economic performance significantly. Favourable external conditions such as the rapid growth in world trade, surging private capital flows and a mini-boom in commodity prices (1994-1995) also helped. After achieving a GDP growth of 5 per cent in 1996, the aggregate economy witnessed a decline in growth rates through to 1999. The years 2000 through 2002 were not very impressive in terms of economic growth either. The contributing factors include increases in oil prices, the resurgence of civil conflict, and the losses from terms of trade resulting from weak commodity prices. The aggregate African economy has, however, been performing better and grew at 4.6, 5.5 and 5.2 per cent during 2003, 2004 and 2005, respectively, due to the impact of earlier economic reforms and an increase in the prices of certain commodities. The economic performance of the African region is expected to improve further over the medium term. The aggregate GDP is projected to grow at 5.7, 5.5 and 5.4 per cent in 2006, 2007 and 2008, respectively. Underlying these projections are reforms for economic diversification and liberalization to strengthen the private sector, increase domestic savings, expand non-oil exports and consolidate successfully domestic and international economic policies.

3.1.2 Trends and prospects of the other regions' economies are discussed in **Appendix B**.

### 3.2 Passenger Air Traffic Trends

3.2.1 Over the 1995-2005 period, scheduled passenger traffic of the airlines of the African region increased at an average annual rate of 5.4 per cent. After achieving high growth rates in 1996 and 1997, traffic declined in 1998 but rebounded in 1999, and continued to grow in 2000. The slowdown in the world economy and the subsequent global crisis in the airline industry following the events of 11 September 2001 resulted in a 2 per cent growth in that year, a decrease of 3 per cent in 2002 and an increase of 1.0 per cent in 2003. The year 2004 witnessed 13.8 per cent growth. In 2005, the growth was 12.1 per cent compared to the world average growth of 8.0 per cent.

3.2.2 According to a medium-term forecast developed by the ICAO Secretariat in 2005, scheduled passenger traffic for the airlines of the African region is expected to increase by 6.9 per cent in 2006, by 6.3 per cent in 2007 and by 5.7 in 2008, well above the levels of passenger traffic growth worldwide. The long term average annual growth rate during the period 2002-2015 is anticipated to be 4.0 per cent.

## 4. MAJOR ROUTE GROUPS TO, FROM AND WITHIN THE AFRICAN REGION

### 4.1 Definition

4.1.1 Traffic forecasts in this report are provided on the basis of route groups to, from and within the African region. The major route groups correspond to the following region-pairs:

- Africa - Europe
- Africa - Middle East
- Africa - Asia/Pacific
- Africa - North America
- Intra Africa

### 4.2 Historical Traffic

4.2.1 According to the historical data, air traffic on the five major route groups to, from and within the African region increased from some 21.9 million passengers in 1993 to 38.3 million passengers in 2004 at an average annual growth rate of 5.2 per cent. The annual passengers carried and growth rates for each of the route groups concerned are illustrated in **Table 1** which shows that passenger air traffic on intra-Africa routes had the highest growth rate and doubled over the period 1993-2004.

4.2.2 This historical data includes all airlines operating on these routes regardless of their region of registration. Traffic data by route group for 2005 was not available at the time of the meeting.

TABLE 1

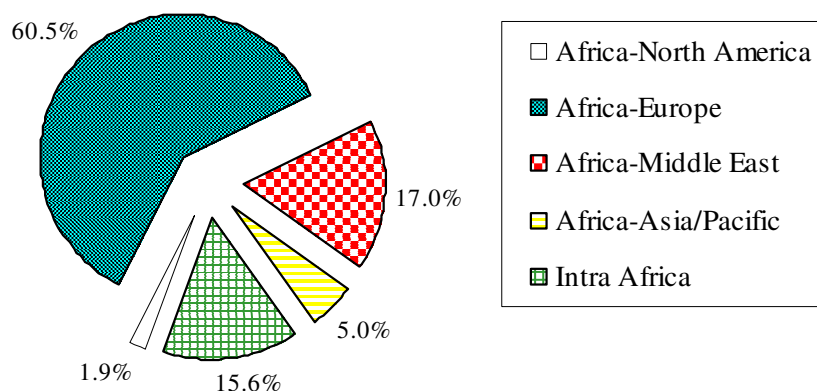
**PASSENGER TRAFFIC BY MAJOR ROUTE GROUP, 1993-2004**  
(Thousands of passengers carried)

|                       | 1993   | 1994   | 1995   | 1996   | 1997   | 1998   | 1999   | 2000   | 2001   | 2002   | 2003   | 2004   | Average<br>Annual<br>Growth<br>(%)<br>1993-2004 |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------------------------------------|
| Africa- North America | 366    | 332    | 434    | 456    | 510    | 627    | 714    | 745    | 810    | 655    | 663    | 725    |                                                 |
| Growth(%)             |        | -9.3   | 30.6   | 5.2    | 11.7   | 23.0   | 13.9   | 4.3    | 8.8    | -19.2  | 1.3    | 9.3    | 6.4%                                            |
| Africa – Europe       | 14,735 | 14,985 | 15,795 | 16,821 | 17,679 | 18,386 | 21,291 | 22,228 | 20,517 | 21,399 | 20,949 | 23,170 |                                                 |
| Growth (%)            |        | 1.7    | 5.4    | 6.5    | 5.1    | 4.0    | 15.8   | 4.4    | -7.7   | 4.3    | -2.1   | 10.6   | 4.2%                                            |
| Africa – Middle East  | 3,192  | 3,413  | 3,419  | 3,703  | 3,955  | 4,113  | 4,179  | 4,162  | 4,275  | 4,676  | 5,205  | 6,522  |                                                 |
| Growth (%)            |        | 6.9    | 0.2    | 8.3    | 6.8    | 4.0    | 1.6    | -0.4   | 2.7    | 9.4    | 11.3   | 25.3   | 6.7%                                            |
| Africa – Asia/Pacific | 1,249  | 1,425  | 1,821  | 1,662  | 1,676  | 1,533  | 1,519  | 1,706  | 1,744  | 1,892  | 1,862  | 1,933  |                                                 |
| Growth (%)            |        | 14.1   | 27.8   | -8.7   | 0.8    | -8.5   | -0.9   | 12.3   | 2.2    | 8.5    | -1.6   | 3.8    | 4.1%                                            |
| Intra-Africa          | 2,371  | 2,537  | 3,120  | 2,961  | 3,331  | 3,787  | 4,185  | 4,629  | 4,666  | 5,174  | 5,340  | 5,970  |                                                 |
| Growth (%)            |        | 7.0    | 23.0   | -5.1   | 12.5   | 13.7   | 10.5   | 10.6   | 0.8    | 10.9   | 3.2    | 11.8   | 8.8%                                            |
| Total                 | 21,912 | 22,691 | 24,588 | 25,604 | 27,150 | 28,447 | 31,889 | 33,470 | 32,011 | 33,796 | 34,019 | 38,319 |                                                 |
| Growth (%)            |        | 3.6    | 8.4    | 4.1    | 6.0    | 4.8    | 12.1   | 5.0    | -4.4   | 5.6    | 0.7    | 12.6   | 5.2%                                            |

4.2.3 In 2004, the Africa-Europe route group had the highest passenger share in the total international traffic to, from and within Africa, followed by Africa-Middle East, Intra-Africa, Africa-Asia/Pacific and Africa-North America route groups as illustrated in **Figure 1**.

FIGURE 1

**Passenger Traffic Shares, 2004**



## 5. METHODOLOGY

5.1 Demand for air travel is primarily determined by income levels, demographics and the price of air travel. In this report, income levels are measured by Gross Domestic Product (GDP) and prices are measured in terms of airline yields (revenue per passenger-kilometre flown). It is also assumed that the general political and economic climate affects air traffic growth; however, no specific assumptions are made about possible political and economic scenarios beyond those implicit in the basic GDP growth rates' forecast.

5.2 The following forecast horizons have been considered:

- Medium-term forecasts (2004-2010)
- Long-term forecasts (2010-2020)

5.3 Econometric models were developed to determine the cause and effect relationship between traffic and other causal factors. It was recognized, however, that even where models were developed, the forecasts should incorporate a significant element of judgement.

5.4 Forecasts of aircraft movements for a particular route-group are determined using the base year movements and the estimated yearly growth rates over the forecast horizon. Yearly aircraft movements growth rates can be derived from the passengers annual growth rates and the changes in load factors and average aircraft size.

5.5 The relationship between the aircraft movements traffic, passenger traffic, load factors and average aircraft size is as follows:

$$\begin{aligned}\text{Aircraft movements} &= \frac{\text{passenger numbers}}{(\text{passenger/seats}) \cdot (\text{seats per aircraft})} \\ &= \frac{\text{passenger numbers}}{(\text{load factor}) \cdot (\text{average aircraft seats})}\end{aligned}$$

5.6 The relationship between changes in the same variables can therefore be deduced:

$$Y = X_1 - X_2 - X_3$$

Where:

- Y = change in aircraft movements (%)
- X<sub>1</sub> = change in passenger numbers (%)
- X<sub>2</sub> = change in load factor (%)
- X<sub>3</sub> = change in average aircraft seats (%)

5.7 Assumptions were made about future trends in load factors and average aircraft seats based on expectations about airlines marketing strategies and the types of aircraft that might be introduced to the route over the forecast period.

5.8 The approach adopted for every route-group can be described as follows:

- i) Develop econometric models explaining the growth of passenger air traffic using historical data;
- ii) Develop aggregate passenger air traffic forecasts for each of the major route groups using appropriate models and judgment;
- iii) Analyze the historical trends of other parameters for each route-group: total seats offered, average aircraft capacity (seats per aircraft), average load factor, total passengers carried as well as aircraft movements compiled by ICAO supplemented by data from IATA, the Official Airline Guide (OAG) and other sources; and
- iv) Derive aircraft movement forecasts based on assumptions about future trends in average aircraft capacity and load factors.

## 6. PASSENGER AIR TRAFFIC FORECASTS

6.1 Applying the approach described above, several econometric models were developed for the major route groups listed in paragraph 4.1.1 using explanatory variables such as GDP and airline yields. An analysis of the statistical significance of each model led to the following selection. Each model is provided with its coefficient of determination  $R^2$  and the t-statistics below each regression coefficient.

6.2 The following econometric model was selected for the Africa-Europe route group:

$$\text{Log(Traffic)} = 1.24 + 1.85 \text{ Log(GDP Europe)} \quad R^2 = 0.94 \\ (8.9)$$

The model shows that the traffic between Africa and Europe is highly dependent upon European GDP with an elasticity of 1.85. This dependency can be explained by the growth in the tourism traffic due to an increase in propensity to travel (income) and also by improved business opportunities. Assuming a GDP growth rate of 2.3 per cent for the forecast horizon, a passenger traffic growth rate of 4.8 per cent until the year 2010 and a growth rate of 4.3 per cent for the period 2010- 2020 were projected.

6.3 The following econometric model was selected for the Africa-Middle East route group:

$$\text{Log(Traffic)} = 1.38 + 1.40 \text{ Log(GDP Middle East)} \quad R^2 = 0.96 \\ (10.9)$$

Traffic on this route group is influenced by the GDP of the Middle East region. Assuming a GDP growth rate of 6.4 per cent over the period 2004-2010, the passenger traffic growth rate on this route group would be in the range of 6.8 per cent. Similarly by applying a GDP growth rate of 4.9 per cent for the long- term forecast for the period 2010-2020, the passenger growth would be 6.9 per cent.

6.4 The following econometric model was selected for the Intra-Africa route group:

$$\text{Log(Traffic)} = -7.26 + 2.45 \text{ Log(GDP Africa)} \quad R^2 = 0.98$$

(15.9)

Intra-Africa traffic is extremely dependent on Africa GDP as proven by the high elasticity. Assuming a GDP growth rate of 3.6 per cent over the period 2004-2010, the passenger traffic growth rate on this route group would be in the range of 10 per cent. Whereas a GDP growth of 3.1 per cent would result in a passenger traffic growth of 7.6 per cent during the period 2010-2020.

6.5 The following econometric model was selected for the Africa-North America route group:

$$\text{Log(Traffic)} = -15.09 + 2.32 \text{ Log(GDP North America)} \quad R^2 = 0.92$$

(7.3)

Traffic between Africa and North America is heavily dependent on the GDP of North America as proven by the high elasticity. Assuming that the GDP of North America would grow at a rate of 2.9 per cent over the period 2004-2010, the passenger traffic growth rate on this route group would be around 7.3 per cent. During the period 2010-2020 a GDP growth of 2.5 per cent would result in a projected passenger traffic growth of 5.9 per cent.

6.6 The following econometric model was developed for the Africa-Asia/Pacific route group:

$$\text{Log(Traffic)} = -1.52 + 0.99 \text{ Log(GDP Asia/Pacific)} \quad R^2 = 0.8$$

(4.2)

Assuming a GDP growth rate of 4.5 per cent over the period 2004-2010, the passenger traffic growth rate on this route group would be 4.7 per cent, whereas, a GDP growth of 4 per cent would result in a passenger traffic growth of 4 per cent during the period 2010-2020.

6.7 Based on the results described above, passenger air traffic to, from and within the African region on the five major route groups for the period 2004-2020 is expected to increase at an average annual rate of 5.7 per cent. The Intra-Africa route group is expected to experience the highest average annual growth rate of 8.5 per cent per annum, followed by Africa-Middle East, Africa-North America, Africa-Europe and Africa-Asia/Pacific route groups with growth rates of 6.9 per cent, 6.4 per cent, 4.5 per cent and 4.3 per cent, respectively, for the period concerned as illustrated in **Table 2**.

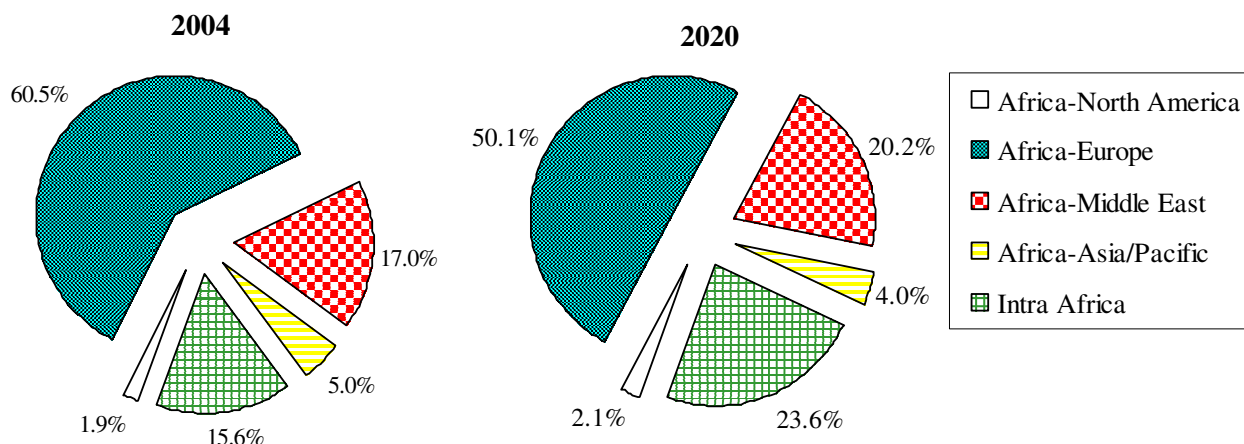
**TABLE 2**  
**PASSENGER FORECAST TO THE YEAR 2020**  
(thousands of passengers carried)

|                      | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  | 2020  | Average annual growth (%) |           |           |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------|-----------|-----------|
|                      |       |       |       |       |       |       |       |       | 2004-2010                 | 2010-2020 | 2004-2020 |
| Africa-North America | 725   | 778   | 835   | 896   | 961   | 1031  | 1106  | 1963  | 7.3                       | 5.9       | 6.4       |
| Africa-Europe        | 23170 | 24282 | 25448 | 26669 | 27949 | 29291 | 30697 | 46767 | 4.8                       | 4.3       | 4.5       |
| Africa-Middle East   | 6522  | 6965  | 7439  | 7945  | 8485  | 9062  | 9678  | 18861 | 6.8                       | 6.9       | 6.9       |
| Africa-Asia/Pacific  | 1933  | 2023  | 2118  | 2218  | 2322  | 2431  | 2546  | 3768  | 4.7                       | 4.0       | 4.3       |
| Intra-Africa         | 5970  | 6567  | 7224  | 7946  | 8740  | 9615  | 10576 | 22001 | 10.0                      | 7.6       | 8.5       |
| TOTAL                | 38319 | 40616 | 43063 | 45673 | 48458 | 51430 | 54603 | 93360 | 6.1                       | 5.5       | 5.7       |

6.8 These forecasts resulted in a change of the relative passenger traffic shares of the various route groups, from the year 2004 to the year 2020 as depicted in **Figure 2**.

**FIGURE 2**

**PASSENGER TRAFFIC SHARES BY ROUTE GROUP, 2004 AND 2020**



**7. ROUTE GROUP AIRCRAFT MOVEMENT FORECASTS**

7.1 Having established the passenger traffic growth rates for each route group in the manner described above, forecasts of aircraft movement growth rates for the period 2004-2020, were developed using the methodology outlined in section 5 and the assumptions related to the future evolution of load factors and average aircraft seats over the same period. Historical trends from the past decade for these two elements were examined carefully and their growth patterns were kept fairly consistent with their past behaviour.

7.2 The future trends in load factors and average seats for the route groups concerned are described in **Tables 3 and 4**, respectively.

**TABLE 3**

**LOAD FACTORS FORECAST TO THE YEAR 2020**

|                      | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2020 |
|----------------------|------|------|------|------|------|------|------|------|
| Africa-North America | 64.4 | 64.4 | 64.4 | 64.4 | 64.4 | 64.4 | 64.4 | 64.4 |
| Africa-Europe        | 73.0 | 73.1 | 73.3 | 73.4 | 73.6 | 73.7 | 74.1 | 74.1 |
| Africa-Middle East   | 68.7 | 68.8 | 68.8 | 68.9 | 69.0 | 69.0 | 69.1 | 69.1 |
| Africa-Asia/Pacific  | 65.2 | 65.2 | 65.2 | 65.2 | 65.2 | 65.2 | 65.2 | 65.2 |
| Intra-Africa         | 61.9 | 62.5 | 63.1 | 63.8 | 64.4 | 65.1 | 65.7 | 65.7 |

**TABLE 4**

**AVERAGE AIRCRAFT SIZE FORECAST TO THE YEAR 2020**  
(number of seats per aircraft)

|                      | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2020 |
|----------------------|------|------|------|------|------|------|------|------|
| Africa-North America | 282  | 283  | 283  | 283  | 283  | 284  | 284  | 284  |
| Africa-Europe        | 240  | 241  | 242  | 244  | 245  | 246  | 247  | 248  |
| Africa-Middle East   | 217  | 218  | 219  | 220  | 222  | 223  | 224  | 225  |
| Africa-Asia/Pacific  | 271  | 271  | 271  | 271  | 271  | 271  | 271  | 271  |
| Intra-Africa         | 124  | 124  | 124  | 124  | 124  | 124  | 124  | 124  |

7.3 The estimated aircraft movement forecasts for the period 2004-2020 and the respective growth rates are given in **Table 5**. It is important to note that after establishing the passenger forecast growth rates for each of the route-groups, in the manner described in Section 6, per cent growth rates in aircraft movements for the periods 2004-2010, 2010-2020 and 2004-2020 were obtained by plugging the corresponding growth rates of load factors and average aircraft seats in the equation shown in paragraph 5.6. The final aircraft movement forecasts, however, were then prepared for each of the route groups concerned by applying these growth rates to the actual 2004 OAG data as the base year.

**TABLE 5**

**AIRCRAFT MOVEMENTS' FORECAST TO THE YEAR 2020**

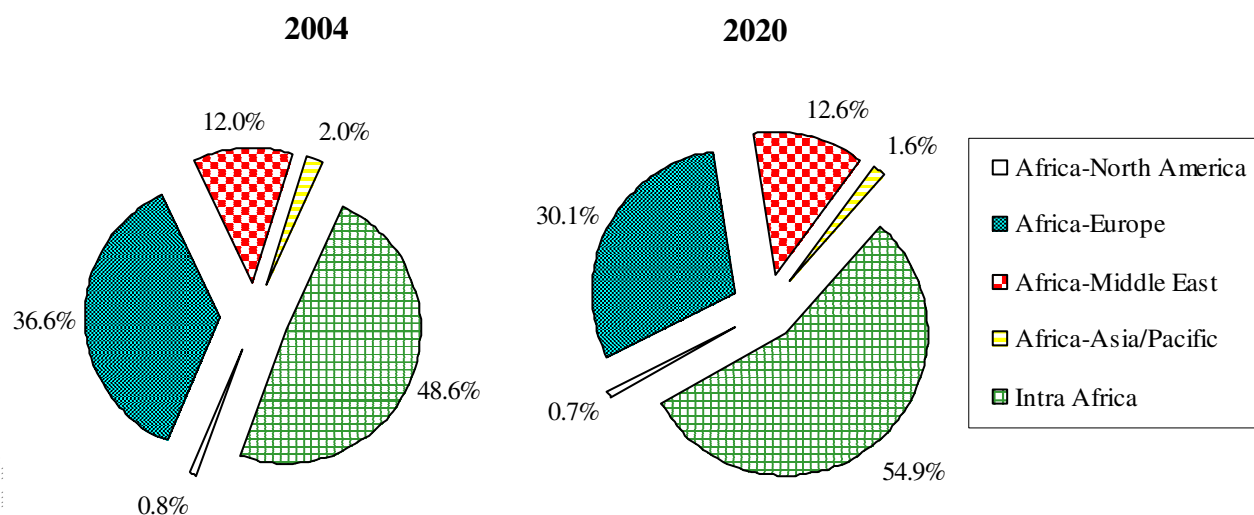
|                      | Actual |  | Forecast |         |  | Average Annual Growths (%) |           |           |
|----------------------|--------|--|----------|---------|--|----------------------------|-----------|-----------|
|                      | 2004*  |  | 2010     | 2020    |  | 2004-2010                  | 2010-2020 | 2004-2020 |
| Africa-North America | 3102   |  | 4705     | 8338    |  | 7.2                        | 5.9       | 6.4       |
| Africa-Europe        | 180551 |  | 228700   | 346692  |  | 4.0                        | 4.2       | 4.2       |
| Africa-Middle East   | 52412  |  | 75034    | 145502  |  | 6.2                        | 6.8       | 6.6       |
| Africa-Asia/Pacific  | 9331   |  | 12292    | 18195   |  | 4.7                        | 4.0       | 4.3       |
| Intra-Africa         | 181984 |  | 303711   | 631806  |  | 8.9                        | 7.6       | 8.1       |
| TOTAL                | 427380 |  | 624442   | 1150532 |  | 6.0                        | 5.9       | 6.0       |

\*OAG data

7.4 The total aircraft movements to, from and within the African region are forecast to increase from some 427 000 in 2004 to slightly over 1 150 000 in 2020 at an average annual growth rate of 6.0 per cent. The resulting movements' shares for the years 2004 and 2020 are depicted in **Figure 3**.

**FIGURE 3**

**AIRCRAFT MOVEMENTS' SHARES BY ROUTE GROUP, 2004 AND 2020**



**8. CITY-PAIR AIRCRAFT MOVEMENT FORECASTS**

8.1 Using the 2005 OAG data as the base year, aircraft movement forecasts for the top 25 city-pairs of each of the route groups, identified in 4.1, were estimated. Where appropriate, the forecasts for the rest of the city-pairs in each route group are aggregated into one figure, and included as “All Other” in the tables. The city-pairs are ranked by descending order based on 2005 departures. The aircraft movement forecasts for the city-pairs of the route groups concerned are given in **Appendix C**.

**9. FORECASTS FOR THE SIX AREAS OF ROUTING DEFINED BY APIRG**

9.1 The forecasts of aircraft movements by city-pairs covered by the Areas of Routing AR-1 through AR-6 and their definitions are given in **Appendix D**.

**10. PEAK-PERIOD PARAMETERS FOR FIR TRAFFIC**

10.1 The analysis of the FIR traffic data provided by ASECNA for the year 2005 covering annual, monthly, daily and hourly traffic parameters as well as traffic densities is provided in **Appendix E**.

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## APPENDIX A

### GLOBAL ECONOMIC AND TRAFFIC TRENDS

#### 1. Historical Economic Trends

1.1 Between 1995 and 2005, the aggregate world economy measured in terms of Gross Domestic Product (GDP) grew at an average annual rate of 3.6 per cent in real terms. Growth rates varied across regions, from a high of 4.6 per cent for Asia/Pacific to a low of 2.4 per cent for Europe. Between 1995 and 2005, the world population increased at an average annual rate of 1.3 per cent. Hence, the world's GDP per capita increased, during the same period, at an average annual rate of 2.3 per cent.

1.2 The world economy is expected to grow by 4.9, 4.7 and 4.6 per cent in 2006, 2007 and 2008, respectively. Over the long period up to 2020, the world economy is projected to grow at an average annual rate of 3.0 per cent in real terms.

1.3 The reasonably positive economic outlook augurs well for global traffic demand over the forecast period.

#### 2. Historical Traffic Trends

2.1 Total scheduled airline traffic, measured in terms of total tonne-kilometres performed, grew at an average annual rate of 5.2 per cent between 1995 and 2005. Passenger-kilometres grew at an average rate of 5.2 per cent per annum and freight tonne-kilometres at 5.5 per cent per annum.

2.2 In broad terms, the pattern of traffic growth over the 1995-2005 period was a reflection of economic conditions experienced over this period. The economic slowdown in 1991 had a serious effect on air traffic. The recovery in traffic in 1992, which occurred despite continuing poor economic performance, was achieved at a cost of significantly reduced revenue yield. Although real yields declined further in 1993 and 1994, the stimulating effect on traffic demand was less dramatic than had been the case in 1992. On the other hand, economic growth began to provide a more solid foundation for traffic growth. These trends continued until 1997 but reversed in 1998 when GDP grew at only 1.9 per cent, providing for a simultaneous growth of total scheduled passenger traffic of only 2.1 per cent. In 1999 and 2000, traffic increased by 6.5 and 8.6 per cent, respectively, supported by the strong performance of the world economy. The economic downturn and related decline in business and consumer confidence had a negative impact on traffic in late 2000 and in 2001, when the events of 11 September exacerbated an already difficult situation. As a result, traffic declined in 2001 by 2.9 per cent, the first decline since 1991 and only the second since 1945. In 2002, demand for air travel remained depressed and traffic grew at only 0.5 per cent. Following declines in the first part of the year due to the outbreak of the Severe Acute Respiratory Syndrome (SARS) and the war in Iraq, traffic rebounded in the second part of 2003 and increased by 1.8 per cent for the whole year. In 2004, traffic recovery continued, mainly for the airlines in the Asia/Pacific region, the worst affected by the SARS outbreak. It was supported by improved performance of some regional economies (Africa, Asia/Pacific, Europe, North America, Latin America/Caribbean) and sustained performance of the Middle East economy, and to some extent by marginal decline of cost of travel expressed in real terms. Traffic recovered strongly in 2004 and 2005 with growth rates of 14.1 and 8.0 per cent, respectively, due mainly to strong GDP growth rates of 5.1 and 4.8 per cent, respectively. However, the average annual growth during the period 2000-2005 is 4.1 per cent.

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## APPENDIX B

### REGIONAL ECONOMIC TRENDS

#### 1. Asia/Pacific

1.1 Over the 1995-2005 period, the aggregate economy of the Asia/Pacific region grew at an average annual rate of 4.6 per cent in real terms, and GDP per capita increased at 3.2 per cent per annum. Asia/Pacific has achieved the largest share in the world economy and has also been the fastest growing region despite a slowdown and recession when GDP growth dropped from 3.9 per cent in 1997 to -0.3 per cent in 1998. Following a financial crisis, the region regained its economic strength and GDP continued to grow well above the world average even in 2001 (3.9 %) despite a global slowdown that year. In 2002, the region's economy grew by about 4.6 per cent. Despite the adverse effects of the SARS outbreak in the first half of 2003, the economy bounced back in the second half of the year with a surge in domestic demand coupled with export growth boosted by increased global activity, the upturn in demand for high technology goods, favorable exchange rates, higher consumer confidence and a boost in tourism and registered a growth rate of 5.9 per cent for 2003. The region's GDP grew at 6.8 per cent in 2004. It is estimated that the region's economy has grown at 6.6 per cent in 2005, the highest growth rate among ICAO regions.

#### 2. Europe

2.1 The aggregate economy of the European region went into decline starting in 1990, the primary reason being the serious contractions of the economies of Eastern Europe and the Commonwealth of Independent States (CIS). By 1997, total output was back to where it had been in 1989, but masked a persistent divergence between countries in Western and Eastern Europe. Over the 1995-2005 period, the GDP for the entire region (including the CIS), grew at an average annual rate of 2.4 per cent in real terms while the aggregate GDP per capita grew at a rate of about 2.0 per cent. It is estimated that the European economy grew by 2.4 per cent in 2005. The European Union GDP grew at 1.8 per cent, the economies of Central and Eastern European countries grew in the aggregate at around 5.3 per cent while those of the CIS grew faster, at 6.5 per cent.

#### 3. North America

3.1 Over the 1995-2005 period, the economy of the North American region grew at an average annual rate of 3.2 per cent in real terms and GDP per capita increased at 2.2 per cent. The U.S. economic expansion, which began in 1991, has been the longest since 1945. By the end of 2000, an economic slowdown had affected economic activities, with a worsening impact after the events of 11 September 2001. As a result, the year 2001 saw a GDP growth of only 0.4 per cent. In the years 2002 to 2004, the region's economic growth showed a steady recovery with growths of 2.3, 2.9 and 4.1 per cent, respectively. The year 2005 witnessed a growth of 3.4 per cent.

#### 4. Middle East

4.1 The economy of the Middle East region has been characterized by some pronounced cycles over the past decade. With political and economic stability in the region, GDP growth, which was comparatively low (1.6 %) in 1994, regained its momentum in 1995 and sustained varying degrees of strength for the following nine years. In 2004 and 2005, the economy achieved growth rates of 5.4 per cent and 5.9 per cent, respectively, in real GDP, well above the 5 per cent level for the three consecutive years, benefiting from higher oil prices. Over the period concerned, the aggregate GDP for the Middle East grew at an average annual rate of 4.3 per cent in real terms, while GDP per capita averaged a 2.1 per cent growth rate per annum.

4.2 The following table depicts the regional economic growth rates for the period 1993-2005.

**GDP GROWTH RATES BY REGION**  
(Per cent)

|               | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| North America | 3.0  | 3.6  | 2.0  | 2.6  | 3.8  | 4.2  | 4.2  | 4.0  | 1.0  | 1.9  | 2.6  | 3.9  | 3.4  |
| Europe        | -3.2 | 0.1  | 2.0  | 2.5  | 2.8  | 2.5  | 2.3  | 3.8  | 1.7  | 0.9  | 0.7  | 2.0  | 2.4  |
| Asia/Pacific  | 3.7  | 4.3  | 5.0  | 5.6  | 3.9  | -0.3 | 3.5  | 5.7  | 3.9  | 4.6  | 5.9  | 6.5  | 6.6  |
| Africa        | 1.1  | 2.4  | 2.9  | 5.0  | 3.4  | 3.2  | 2.8  | 3.3  | 4.1  | 3.6  | 4.6  | 5.3  | 5.2  |
| Middle East   | 3.8  | 1.6  | 3.8  | 5.2  | 3.8  | 2.7  | 1.6  | 5.4  | 3.9  | 4.2  | 5.8  | 5.5  | 5.9  |

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