

**Cir 286  
AT/121**



# **Highlights in the Economic Development of Airports and Air Navigation Services**

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**Conference on the Economics of  
Airports and Air Navigation Services  
(ANSCConf 2000)**

Approved by the Secretary General  
and published under his authority

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(ENGLISH ONLY)

## **HIGHLIGHTS IN THE ECONOMIC DEVELOPMENT OF AIRPORTS AND AIR NAVIGATION SERVICES**

### **CORRIGENDUM**

Please replace existing pages 80 and 81 with the attached pages dated 12/9/02 and bearing the Corr. notation.

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CIR 286-AT/121  
28/10/02  
Corr. No. 2  
(English/Arabic/Russian)

## **HIGHLIGHTS IN THE ECONOMIC DEVELOPMENT OF AIRPORTS AND AIR NAVIGATION SERVICES**

### **CORRIGENDUM NO. 2**

Please replace existing pages 43, 47, 85 and 106 with the attached pages dated 28/10/02 and bearing the Corr. 2 notation.

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CIR 286-AT/121  
30/4/03  
Corr. No. 3  
(E/A/F/R/S)

## **HIGHLIGHTS IN THE ECONOMIC DEVELOPMENT OF AIRPORTS AND AIR NAVIGATION SERVICES**

### **CORRIGENDUM NO. 3**

Please replace existing pages 21, 22, 27, 28, 35 and 36 with the attached pages dated 30/4/03 and bearing the Corr. 3 notation.

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# Foreword

This Circular presents information on the economic, organizational and regulatory status of airports and air navigation service providers in the year 2000. It is based on a survey of Contracting States (State Letter SR 167/1 of 6 August 1999) conducted prior to the Conference on the Economics of Airports and Air Navigation Services (ANSCConf 2000, Montreal, 19 to 28 June 2000). The survey questionnaire sent to Contracting States is reproduced in Attachment A.

The information developed from the results of that survey was presented to the Conference as background material for the discussions on a number of Agenda items.

The present Circular reproduces that material in a standardized format and incorporates additional information received from Contracting States as of June 2000, subsequent to the preparation of the Conference papers.

While the number of States responding to the survey amounts to only about half of the Contracting States of ICAO, these States represent, in aggregate, 90 per cent of world traffic expressed in total tonne-kilometres performed in 1999 in scheduled services. Consequently, the status and trends indicated in this Circular may be regarded as providing a reasonably accurate global picture of aviation infrastructure and how it is developing.

Previous surveys have been used as background material for similar Conferences in the past. To the extent that the information presented to the 1991 Conference (Conference on Airport and Route Facility Management) is comparable with the information in this Circular, relevant trends analysis has been incorporated.

Unless indicated otherwise, all references in this circular to “cents” mean “U.S. cents”, and all references to “dollars” mean “U.S. dollars”.

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# Chapter 1

## ORGANIZATION AND MANAGEMENT

### BACKGROUND

1.1 This chapter presents information on the organizational forms under which airports and air navigation services are operated, on private involvement in airport operations and on new trends emerging in the management of airports and air navigation services. In the years since the 1991 Conference on Airport and Route Facility Management (CARFM), the pace of change in the forms under which airports and air navigation services operate has accelerated, leading to a wider range of ownership and control structures than existed before. To obtain the most recent information available on these issues prior to ANSConf 2000, States were requested to provide relevant information in a pre-conference questionnaire. In this and subsequent chapters the information obtained is presented in both global and regional terms. The data with regard to individual States (and, where relevant, to individual airports) or groups of States, can be found in the appendices to this chapter.

### STATE PRACTICES RELATED TO AIRPORT MANAGEMENT

1.2 Table 1-1 summarizes, by region, the ownership and operation of airports (Appendix 1 to this chapter provides the breakdown by responding States). The table and appendix show that the prevailing organizational form for the 94 States responding to the questionnaire (covering over 350 airports) was the government-owned autonomous airport entity (53 States). Second most common was the Department of Civil Aviation (26 States), followed by a ministry or other national government department (21 States), regional or municipal government (14 States), and private interests operating the airport under a concession or leasing arrangement (13 States). The least common form was the privately owned airport entity (8 States). (The total number of States quoted exceeds 94 because of different responses for different airports in some States). The survey also indicated that the organizational forms that were expected to grow most were government-owned autonomous entities, private interests operating the airport under a concession or leasing arrangement, and privately owned airport entities.

1.3 Compared to the survey conducted prior to the 1991 CARFM, the number of States in which airports are organized as government-owned autonomous authorities has increased notably, as has the number of States in which airports are managed by privately owned entities.

1.4 With regard to ownership of airports, 65 States reported on their current situation and 35 States on their future plans. These States and their responses are set out in Appendix 2 to this chapter. From the responses it appears that 34 major airports in the world (in 14 States located mainly in Europe, Africa, and Asia/Pacific) are currently owned by private interests either completely (16 airports) or in part (9 airports where private interests have a majority holding and 9 where private interests have a minority holding). The large majority of airports remain under government or public ownership either wholly or through a majority holding. As to the future, tentative indications are that private involvements in ownership will increase most in Europe, although plans to that effect are also under active consideration in the Caribbean, Central and South America and the Asia and Pacific regions.

**Table 1-1. Ownership and operation of airports  
(current and planned)**

Region	No. of States	Government-owned autonomous entity		Directorate of Civil Aviation		Ministry or other government department		Regional or municipal government		Concession or leasing arrangement		Privately owned airport entity		Other	
		Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned
Asia Pacific	15	10	4	6	2	3	1	2	0	1	2	3	3	2	3
Middle East	8	2	3	5	0	1	1	0	0	0	0	0	0	0	0
Africa	23	15	4	6	1	4	0	1	0	2	3	2	1	2	0
Europe	32	20	5	5	1	10	7	9	3	4	11	3	6	2	2
North America	2	0	0	0	0	0	0	1	1	1	0	0	0	0	0
Caribbean, Central and South America	14	6	2	4	2	3	0	1	0	5	5	0	1	0	0
TOTAL	94	53	18	26	6	21	9	14	4	13	21	8	11	6	5

1.5 The survey also sought to establish where private domestic and/or foreign interests own and/or operate major airport areas or services. The responses showed that while the number of privately owned airport authorities remains somewhat limited at present, there were two major airport areas or services, as indicated by region in Table 1-2, where private interests were involved in ownership and/or operation to a noticeable extent. These areas were, in descending order, ground handling (73 States) and cargo terminals (66 States), confirming trends clearly established at the time of the 1991 CARFM Conference. This pattern of distribution also broadly applies at the regional level. Private involvement has become increasingly important in the ownership/operation of passenger terminals (48 States) and security services (47 States). Air traffic control (including communications) was provided at the airport level by private interests wholly or in part in 39 States. Where private interests were involved they were principally domestic, although in the cases of ground handling and cargo terminals mixed domestic and foreign interests were involved, primarily in Europe. Involvement by foreign interests alone was rare or non-existent. The breakdown of responses by States on services owned or operated by private interests is set out in Appendix 3 to this chapter; this appendix also gives a breakdown of domestic, foreign and mixed private interests in major areas or services.

**Table 1-2. Major areas or services owned or operated by private interests**

Region	Number of States	Passenger terminal	Cargo terminal	Ground handling	Air traffic control	Security services	Other
Asia Pacific	15	10	14	12	8	11	2
Middle East	8	4	6	7	3	3	1
Africa	23	9	15	14	8	8	3
Europe	32	15	21	26	13	15	5
North America	2	1	1	2	1	1	0
Caribbean, Central and South America	14	9	9	12	6	9	1
TOTAL	94	48	66	73	39	47	12

**Table 1-3. Ownership and operation of air navigation services  
(current and planned)**

Region	No. of States	Ownership and operation												Charges collection			
		Government-owned autonomous entity		Directorate of Civil Aviation		Ministry or other government department		International operating agency		Privately owned entity		Other		Collects itself		Collected by other body/agency	
		Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned
Asia/Pacific	15	9	4	7	1	2	2	0	0	0	0	0	0	11	–	2	–
Middle East	8	0	2	6	0	1	0	0	0	0	0	1	0	6	–	2	–
Africa	22	10	5	9	1	2	0	2	0	0	0	0	0	17	–	6	–
Europe	32	21	9	7	2	2	4	0	1	0	2	2	1	16	–	27	–
North America	2	0	0	0	0	1	0	0	0	1	0	0	1	1	–	0	–
Caribbean, Central and South America	15	7	3	5	1	4	1	3	0	1	0	0	0	14	–	5	–
<b>TOTAL</b>	<b>94</b>	<b>47</b>	<b>23</b>	<b>34</b>	<b>5</b>	<b>12</b>	<b>7</b>	<b>5</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>65</b>	<b>–</b>	<b>42</b>	<b>–</b>

## STATE PRACTICES RELATED TO AIR NAVIGATION SERVICES MANAGEMENT

1.6 The survey response with regard to ownership and operation of air navigation services is summarized by region in Table 1-3 (the breakdown of responses by States is in Appendix 4 to this chapter). States in some instances have given several responses to the same question. Comparisons with the situation as it was at the time of the 1991 CARFM Conference was not possible since no specific survey on organizational aspects of air navigation services was conducted at that time.

1.7 Out of the 94 States providing information on the overall structure under which air traffic services (ATS) were provided, the most commonly quoted form reported was the government-owned autonomous entity (47 States), followed by Directorate of Civil Aviation (34 States). Much less common were ministry or other national government departments (12 States). The other alternatives were rare, with 5 States reporting international agencies, 2 States reporting privately owned entities and 1 State reporting that another State provided ATS on its behalf. (The accumulated total of States by form of structure exceeds the total number of States reporting because of multiple responses in a few instances). These results should be interpreted cautiously since, for example, a number of States in which ATS is known to be provided by an international operating agency have not responded (mainly in Africa and Central America, where such agencies are active), which gives a misleading impression of the relevance of these agencies in global terms. But the main conclusion to be drawn is the importance, in relative as well as in absolute terms, of autonomous bodies; with 8 States planning government-owned autonomous bodies and 4 States planning private or public/private bodies, autonomous bodies will soon become the prevailing organizational structure under which ATS is provided.

1.8 With regard to the collection of air navigation services charges in the 94 responding States (also shown in Table 1-3), a majority (65 States) collect the charges themselves, while a relatively large number (42 States) have contracted their collection to a third party (primarily an international agency, and in few instances another State). This is particularly noticeable with regard to Europe, where EUROCONTROL collects en-route air navigation services charges for the majority of its member States (some of which, however, also collect terminal (approach and aerodrome control) charges themselves).

**Table 1-4. Provision of approach and  
aerodrome control services**

Region	No. of States	Airport administration itself	Organization providing ATS en route	Other
Asia/Pacific	15	8	9	0
Middle East	8	3	3	2
Africa	20	8	13	2
Europe	32	8	27	2
North America	2	0	2	0
Caribbean, Central and South America	15	5	10	1
TOTAL*	92	32	64	7

\* Based on information provided by the same States as those listed in Table 1.3, with two exceptions.

**Table 1-5. Provision of other air navigation services  
by the ATS provider**

Region	No. of States	COM*	MET*	SAR*	AIS*
Asia/Pacific	15	14	2	12	15
Middle East	8	8	5	8	8
Africa	20	20	5	15	19
Europe	32	29	10	14	31
North America	2	2	2	1	2
Caribbean, Central and South America	15	14	11	11	12
TOTAL **	92	87	35	61	87

\* COM: Aeronautical telecommunication service

MET: Meteorological services for air navigation

SAR: Search and rescue

AIS: Aeronautical information service

\*\* Based on information provided by the same States as those listed under Table 1.3, with two exceptions.

1.9 Approach and aerodrome control services, as indicated by region in Table 1-4 (the breakdown by States is in Appendix 5 to this chapter), were provided in a majority of the responding 92 States by the same organization that provides ATS en route. In about one-third of the States surveyed (and especially in the Asia and Pacific regions), these services were provided by the airport administration.

1.10 Table 1-5 shows, by region with regard to 92 responding States, that aeronautical telecommunication services (COM) and aeronautical information services (AIS) in a large majority (87 States) and meteorological services (MET) in a minority (35 States) were provided by the same organization as that providing ATS. Search and rescue services (SAR) in 61 States were provided by the ATS provider; Europe was the only region in which SAR services were not reported by the majority of States to be provided by the ATS provider. The breakdown by responding States is in Appendix 6 to this chapter.

## TRENDS

1.11 Signs of globalization in airport management are emerging, with transnational ownership and/or operation becoming more widespread as a greater number of States seek to transfer their airports from direct government management and control to autonomous entities or private enterprise. With the expanding number of privatized airports and the increased prospects of their profitability, interest is mounting and competition increasing within private industry to assume the leading role in airport operations globally. As a consequence, major airport management companies, most of them associated with prominent airports in developed regions, are applying for and in many cases obtaining management contracts for individual airports or groups of airports in States in other regions.

1.12 Another new trend is the emergence of airport networks, spurred on not only by the globalization trend but also by cooperative accords between airports. The development of airport alliances may follow. It should be noted in this context that as far as the users (airlines, passengers, shippers, etc.) are concerned, the potential benefits of airport alliances remain to be clearly demonstrated.

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**Appendix 1 to Chapter 1. Ownership and operation of airports**  
(breakdown of Table 1-1 by responding States, in alphabetical order)

STATE Airport(s)	Government-owned autonomous entity		Directorate of Civil Aviation		Ministry or other govt department		Regional or municipal government		Concession or leasing arrangement		Privately owned airport entity		Other	
	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned
ALGERIA 14 airports (1)	x													
ARGENTINA Buenos Aires (2)										x				
AUSTRALIA Sydney Melbourne Brisbane Perth											x			
AUSTRALIA Melbourne										x				
AUSTRALIA Brisbane										x				
AUSTRALIA Perth										x				
AUSTRIA Vienna					x		x					x		
AZERBAIJAN Baku			x			x								
BAHRAIN Bahrain			x											
BANGLADESH Dhaka			x											
BARBADOS Bridgetown		x			x									
BELGIUM Brussels Antwerpen Charleroi Liège Ostend	x						x				x			
BELGIUM Antwerpen							x				x			
BELGIUM Charleroi							x							
BELGIUM Liège							x							
BELGIUM Ostend							x				x			
BOLIVIA 3 airports (3)										x				
BOTSWANA 6 airports (4)		x	x		x									
BRAZIL 6 airports (5)	x						x			x				
BRUNEI DARUSSALAM Bandar Seri Begawan	x		x		x		x			x		x		(6)
BULGARIA Sofia					x	x								
BURKINA FASO 2 airports (7)														(8)
CAMEROON 3 airports (9)										x				
CANADA All major airports										x				
CHILE Airport network			x	x						x	x			



STATE Airport(s)	Government-owned autonomous entity		Directorate of Civil Aviation		Ministry or other govt department		Regional or municipal government		Concession or leasing arrangement		Privately owned airport entity		Other	
	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned
CHINA Hong Kong SAR (10) Hong Kong	x													
COSTA RICA Alajuela San Jose Guanacaste			x	x						x				
CUBA Havana	x													
CZECH REPUBLIC Prague	x											x		
DENMARK Copenhagen										x				
ECUADOR 2 airports (11)			x									x		
EGYPT 5 airports (12)			x											
ERITREA Asmara	x													
ESTONIA Tallinn	x	x												
FINLAND Helsinki	x													
FRANCE Paris Bale/Mulhouse (13) Lyon Marseille Nice Toulouse	x	x												
GAMBIA Banjul	x													
GERMANY Berlin Bremen Dresden Dusseldorf Erfurt Frankfurt Hamburg Hannover Cologne/Bonn Leipzig Munich	x							x				x		
								x				x		(14)
								x		x				(15)





STATE Airport(s)	Government-owned autonomous entity		Directorate of Civil Aviation		Ministry or other govt department		Regional or municipal government		Concession or leasing arrangement		Privately owned airport entity		Other	
	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned
SLOVAKIA 5 airports (32)	x							x		x				
SLOVENIA Ljubljana	x									x				
Maribor	x							x		x				
Portoroz								x		x				
SOUTH AFRICA 2 airports (33)						x								x
Bloemfontein											x			x
Durban	x													
East London	x			x										x
Johannesburg						x								x
Kimberley											x			
Port Elizabeth														
Upington											x			
SPAIN 40 airports	x													
SRI LANKA Colombo	x	x												
SWAZILAND Mbabane				x										
SWEDEN 3 airports (34)	x	x												
SWITZERLAND Geneva	x													
Bale/Mulhouse (13)														
Zurich								x		x				(13) (13)
TAJIKISTAN 4 airports (35)	x	x		x		x								
THAILAND Bangkok-Don Muang	x													(36)
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA 2 airports (37)	x									x				x
TUNISIA 7 airports (38)	x	x												
TURKEY Istanbul	x									x				
TURKMENISTAN Ashgabat						x		x						
UGANDA Entebbe	x													
UKRAINE Kyiv-Borispol						x		x						
Dniepropetrovsk						x								
Donetsk						x		x						

STATE Airport(s)	Government-owned autonomous entity		Directorate of Civil Aviation		Ministry or other govt department		Regional or municipal government		Concession or leasing arrangement		Privately owned airport entity		Other	
	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned
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												x	x	
												x	x	
								x				x		
								x	x			x		
								x				x		
								x	x	x	x			
								x						
UNITED REPUBLIC OF TANZANIA Dar es Salaam Kilimanjaro														
		x												
						x								
UNITED STATES Atlanta Chicago Dallas Los Angeles New York-JF Kennedy San Francisco														
								x	x					
								x	x					
								x						
								x	x					
								x	x					
URUGUAY Montevideo														
	x										x			
UZBEKISTAN Tashkent														
	x													
VIET NAM 2 airports (40)														
						x	x							
ZAMBIA Lusaka and other airports														
	x											x	x	
ZIMBABWE 8 airports (41)														
	x													

## NOTES

- Algiers, Adrar, Annaba, Bejaia, Constantine, Djanet, Ghardaia, Hassi Messaoud, In Amenas, Oran, Tamanrasset, Tebessa, Tiaret, Tlemcen.
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- Corporate, APM, cargo.
- Bobo Dioulasso, Ouagadougou.
- ASECNA.
- Douala, Garoua, Yaoundé.
- Hong Kong Special Administrative Region.
- Guayaquil, Quito.
- Alexandria, Aswan, Hurghada, Luxor, Sharm el Sheikh.
- Bi-national Franco-Swiss entity.
- Partly privatized: 50% city of Dusseldorf, 50% private (Airport Partners GmbH).
- Partly privatized.
- Ownership regional government, operation private.

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17. Refers to the new Athens airport at Spata.
  18. Chania, Corfu, Heraklion, Kos, Rhodes, Thessaloniki, Zakynthos.
  19. Cork, Dublin, Shannon.
  20. Naples and Bologna.
  21. Kingston, Montego Bay.
  22. Airport authority.
  23. Kaunas, Palanga, Siauliai, Vilnius.
  24. Acapulco, Cancun, Guadalajara, Mazatlan, Merida, Mexico City, Monterrey, Puerto Vallarta, San Jose del Cabo.
  25. Agadir, Al Hoceima, Casablanca-Mohamed V, Fez, Marrakesh, Ouarzazate, Oujda, Rabat.
  26. Katima Mulilo, Keetmanshop, Luderitz, Ondangwa, Rurdu, Walvis Bay, Windhoek (2 airports).
  27. Amsterdam, Eindhoven, Rotterdam.
  28. Company listed on public stock exchange.
  29. Airport company 50% national, 50% local.
  30. Jeddah, Riyadh.
  31. ASECNA.
  32. Bratislava, Kosice, Poprad, Sliat, Piestany.
  33. Cape Town, George.
  34. Gothenburg, Malmo, Stockholm-Arlanda.
  35. Dushanbe, Khudzhand, Kurgan Tyube, Kulyab.
  36. Partly privatized.
  37. Ohrid, Skopje.
  38. Djerba, Gafsa, Monastir, Sfax, Tabarka, Tozeur, Tunis.
  39. BAA plc: Aberdeen, Edinburgh, Glasgow, London-Heathrow, London-Gatwick, London-Stansted.
  40. Hanoi, Ho-Chi-Minh City.
  41. Bulawayo, Buffalo Range, Charles Pr., Harare, Hwange, Kariba, Masvingo, Victoria Falls.
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**Appendix 2 to Chapter 1. Ownership of airports**  
(listing by responding States, in alphabetical order)

STATE Airport(s)	Per cent owned by private interests		Per cent owned by public interests	
	Current	Planned	Current	Planned
AUSTRALIA				
Brisbane	100	100	0	0
Melbourne	100	100	0	0
Perth	100	100	0	0
Sydney	0	100	100	0
AUSTRIA				
Vienna	47.9		52.1	
BAHRAIN				
Bahrain	0		100	
BARBADOS				
Bridgetown	0	0	100	100
BELGIUM				
Brussels	36.4		63.6	
Charleroi	15		85	
Liège	20		80	
BOLIVIA				
Cochabamba	100		0	
La Paz	100		0	
Santa Cruz	100		0	
BRAZIL				
Manaus	0		100	
Porto Alegre	0		100	
Recife	0		100	
Rio de Janeiro-Galeao	0		100	
Salvador	0		100	
Sao Paulo-Guarulhos	0		100	
BRUNEI DARUSSALAM				
Bandar Seri Begawan	0		100	
BULGARIA				
Sofia	0	49	100	51
CAMEROON				
3 airports (1)	59		41	
CANADA				
All major airports	0	0	100	100
CHILE				
Airport network	0	0	100	100
COSTA RICA				
3 airports (2)	0	0	100	100
CZECH REPUBLIC				
Prague	0	50	100	50
DENMARK				
Copenhagen	49		51	
ECUADOR				
2 airports (3)		60		40



STATE Airport(s)	Per cent owned by private interests		Per cent owned by public interests	
	Current	Planned	Current	Planned
EGYPT 5 airports	0		100	
FINLAND Helsinki	0		100	
GAMBIA Banjul	0		100	
GERMANY Berlin	0	100	100	0
Bremen	0	0	100	100
Dresden	0	0	100	100
Dusseldorf	50		50	
Frankfurt	0		100	
Hamburg	0	49	100	51
Hannover	30		70	
Cologne/Bonn	0	50	100	50
Munster/Osnabruck	0		100	
Saarbrucken	0	0	100	100
Stuttgart	0		100	
GHANA Accra	0	(4)	100	(4)
GREECE Athens-Hellinikon	0		100	
Athens-Spata		45		55
7 airports (5)	0		100	
IRAN, ISLAMIC REPUBLIC OF Tehran	0		100	
IRELAND 3 airports (6)	0	49	100	51
JAMAICA 2 airports (7)	0		100	
JAPAN Osaka-Kansai	15.2		84.8	
JORDAN Amman	0		100	
KENYA Nairobi	49		51	
LEBANON Beirut	0	0	100	100
LITHUANIA 4 airports (8)	0		100	
MALDIVES Male	0	0	100	100
MALTA Luqa	0		100	
MAURITIUS Mauritius	3		97	

STATE Airport(s)	Per cent owned by private interests		Per cent owned by public interests	
	Current	Planned	Current	Planned
<b>MEXICO</b>				
Acapulco	0	100	100	0
Cancun	15	100	85	0
Guadalajara	15	100	85	0
Mazatlan	0	100	100	0
Merida	15	100	85	0
Mexico City	0	100	100	0
Monterrey	0	100	100	0
Puerto Vallarta	15	100	85	0
San Jose del Cabo	15	100	85	0
<b>MONACO</b>				
Monaco	0	0	100	100
<b>NAMIBIA</b>				
8 airports (9)	0		100	
<b>NEPAL</b>				
Kathmandu	0		100	
<b>NETHERLANDS</b>				
3 airports (10)	0	10	100	90
<b>NEW ZEALAND</b>				
Auckland	56	(11)	44	(12)
Dunedin	0		100	
Wellington	66.7	66.7	33.3	33.3
<b>NORWAY</b>				
All State-owned airports	0	0	100	100
<b>PANAMA</b>				
Panama City	15		85	
<b>POLAND</b>				
Warsaw	0	49	100	51
<b>REPUBLIC OF MOLDOVA</b>				
Chisinau	0		100	
<b>RUSSIAN FEDERATION</b>				
Moscow-Sheremetyevo	0	0	100	100
St Petersburg	0	0	100	100
Rostov-na-Donu	62		38	
<b>SENEGAL</b>				
Dakar		4/		4/
<b>SLOVAKIA</b>				
5 airports (13)	0	40	100	60
<b>SLOVENIA</b>				
Ljubljana	44.3	99	55.7	1
Maribor	0	99	100	1
Portoroz	0	99	100	1
<b>SOUTH AFRICA</b>				
Cape Town	49		51	
Durban	20	49	80	51

STATE Airport(s)	Per cent owned by private interests		Per cent owned by public interests	
	Current	Planned	Current	Planned
East London	20	49	80	51
George	49		51	
Johannesburg	24.2	100	75.8	0
Upington	20		80	
SPAIN 40 airports	0		100	
SRI LANKA Colombo	0	0	100	100
SWAZILAND Mbabane	0		100	
SWEDEN 3 airports (14)	0	0	100	100
SWITZERLAND Zurich	0		100	
TAJIKISTAN 4 airports (15)	0	49	100	51
THAILAND Bangkok-Don Muang	0	0	100	100
Bangkok-Nong Ngu Hao	0	30	100	70
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA 2 airports (16)	0		100	
TURKEY Istanbul	0		100	
TURKMENISTAN Ashgabat	0	0	100	100
UKRAINE Dniepropetrovsk	0	49	100	51
Donetsk	0		100	
Kyiv-Borispol	0		100	
Lvov	0	0	100	100
Odessa	0	0	100	100
Simferopol	0	0	100	100
UNITED KINGDOM BAA (17)	100	100	0	0
Belfast	100	100	0	0
Birmingham	51		49	
Bristol	51		49	
Cardiff	100	100	0	0
East Midlands	100	100	0	0
London City	100	100	0	0
Manchester	0	0	100	100
UNITED REPUBLIC OF TANZANIA Dar es Salaam	0		100	

STATE Airport(s)	Per cent owned by private interests		Per cent owned by public interests	
	Current	Planned	Current	Planned
UNITED STATES				
Chicago	0		100	
Dallas-Fort Worth	0		100	
Los Angeles	0		100	
New York-JF Kennedy	0		100	
UZBEKISTAN				
Tashkent	0	0	100	100
VIET NAM				
2 airports (18)	0	0	100	100
ZAMBIA				
Major airports	49	100	51	0

**NOTES**

1. Douala, Garoua, Yaoundé.
2. Alajuela, San Jose-Juan Santamaria, Guanacaste.
3. Guayaquil, Quito.
4. To be determined.
5. Chania, Corfu, Heraklion, Kos, Rhodes, Thessaloniki, Zakynthos.
6. Cork, Dublin, Shannon.
7. Kingston, Montego Bay.
8. Kaunas, Palanga, Siauliai, Vilnius.
9. Katima Mulilo, Keetmanshop, Luderitz, Ondangwa, Rurdu, Walvis Bay, Windhoek (2 airports).
10. Amsterdam, Eindhoven, Rotterdam.
11. Greater.
12. Lesser.
13. Bratislava, Kosice, Poprad, Sliat, Piestany.
14. Gothenburg, Malmo, Stockholm-Arlanda.
15. Dushanbe, Khudzhand, Kurgan Tyube, Kulyab.
16. Ohrid, Skopje.
17. BAA plc: Aberdeen, Edinburgh, Glasgow, London-Heathrow, London-Gatwick, London-Stansted.
18. Hanoi, Ho Chi Minh City.

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**Appendix 3 to Chapter 1. Major areas or services owned  
or operated by private interests**  
(breakdown of Table 1-2 by responding States, in alphabetical order)

D = Domestic private interests (exclusively)

F = Foreign private interests (exclusively)

M = Mixed (domestic and/or foreign private interests)

STATE Airport(s)	Passenger terminal			Cargo terminal			Ground handling			Air traffic control			Security services			Other			
	D	F	M	D	F	M	D	F	M	D	F	M	D	F	M	D	F	M	
ALGERIA 14 airports (1)																			
ARGENTINA Buenos Aires-Ezeiza	x			x			x											(2)	
Buenos Aires-Aeroparque	x			x														(2)	
AUSTRALIA 4 airports (3)			x			x			x	x			x						
AUSTRIA Vienna																			
AZERBAIJAN Baku	x					x			x									(4)	
BAHRAIN Bahrain				x			x												
BANGLADESH Dhaka	x			x			x			x			x						
BELGIUM 5 airports (5)	x			x			x			x			x						
BARBADOS Bridgetown	x			x			x			x			x						
BOLIVIA 3 airports (6)		x			x			x		x				x					
BOTSWANA 6 airports (7)																			
BRAZIL 6 airports (8)																			
BRUNEI DARUSSALAM Bandar Seri Begawan	x			x			x			x			x						
BULGARIA Sofia																			
BURKINA FASO 2 airports (9)	x			x			x			x								(10)	
CAMEROON 3 airports (11)			x	x			x					x		x					
CANADA All major airports	x			x			x			x			x						
CHILE Airport network			x			x			x										
CHINA (Hong Kong SAR) (12) Hong Kong				x			x						x						

STATE Airport(s)	Passenger terminal			Cargo terminal			Ground handling			Air traffic control			Security services			Other		
	D	F	M	D	F	M	D	F	M	D	F	M	D	F	M	D	F	M
COSTA RICA 3 airports (13)			x			x			x						x			
CUBA Havana																		
CZECH REPUBLIC Prague	x					x			x	x			x					
DENMARK Copenhagen	x			x					x	x			x					
ECUADOR 2 airports (14)	x			x			x			x			x					
EGYPT 5 airports (15)																		
ERITREA Asmara				x			x											(16)
ESTONIA Tallinn							x											
FINLAND Helsinki						x			x									
FRANCE 8 airports (17)						x			x									
GAMBIA Banjul						x												
GERMANY 15 airports (18)	x					x			x			x			x			(19)
GHANA Accra	x					x	x											
GREECE 8 airports (20)									x									
HAITI Port-au-Prince	x			x			x			x			x					
ICELAND Keflavik				x			x											
IRAN (ISLAMIC REPUBLIC OF) Tehran	x			x			x			x			x					
IRELAND 3 airports (21)																		
ITALY Rome-Fiumicino 2 airports (22)	x			x					x	x			x					
JAMAICA 2 airports (23)							x											(24)
JAPAN 2 airports (25)	x			x					x				x					
JORDAN Amman	x			x			x			x			x					





STATE Airport(s)	Passenger terminal			Cargo terminal			Ground handling			Air traffic control			Security services			Other		
	D	F	M	D	F	M	D	F	M	D	F	M	D	F	M	D	F	M
ROMANIA Bucharest 2 airports (38)	x			x			x		x			x						(37)
RUSSIAN FEDERATION Khabarovsk Moscow-Sheremetyevo		x		x														
SAINT VINCENT AND THE GRENADINES Kingston							x											
SAO TOME AND PRINCIPE Sao Tome																		
SAUDI ARABIA 2 airports (39)	x			x			x											
SENEGAL Dakar	x			x			x		x			x						
SINGAPORE Singapore				x			x											
SLOVAKIA 5 airports (40)	x			x			x		x			x						
SLOVENIA Ljubljana	x			x			x					x						(41)
SOUTH AFRICA 9 airports (42)	x					x			x			x				x		
SPAIN 40 airports																		
SRI LANKA Colombo				x														
SWAZILAND Mbabane				x			x											
SWEDEN 3 airports (43)									x									
SWITZERLAND 3 airports (44)	x			x			x				x							
TAJKISTAN 4 airports (45)	x			x			x				x				x			
THAILAND Bangkok			x			x			x		x				x			
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA 2 airports (46)																		
TUNISIA 7 airports (47)				x			x											(48)
TURKEY Istanbul	x			x			x				x				x			
TURKMENISTAN Ashgabat	x			x			x				x				x			(49)

STATE Airport(s)	Passenger terminal			Cargo terminal			Ground handling			Air traffic control			Security services			Other		
	D	F	M	D	F	M	D	F	M	D	F	M	D	F	M	D	F	M
UGANDA Entebbe																		
UKRAINE 6 airports (50)	x			x			x			x			x					
UNITED KINGDOM 14 airports (51)	x			x					x	x					x			x
UNITED REPUBLIC OF TANZANIA 2 airports (52)	x			x			x			x			x					
UNITED STATES 6 airports (53)							x											
URUGUAY Montevideo							x						x					
UZBEKISTAN Tashkent	x			x			x						x					
VIET NAM 2 airports (54)						x												
ZAMBIA Major airports	x			x			x			x			x					
ZIMBABWE 8 airports (55)				x					x				x					

## NOTES

*General:* Absence of information with regard to a specific major area or service at an airport may be due to either the State not having provided this specific information although it did provide information for the other related questions, or that there is no private involvement in the area or service in question.

- Algiers, Adrar, Annaba, Bejaia, Constantine, Djanet, Ghardaia, Hassi Messaoud, In Amenas, Oran, Tamanrasset, Tebessa, Tiaret, Tlemcen.
- Ramp handling.
- Brisbane, Melbourne, Perth, Sydney.
- Catering.
- Antwerpen, Brussels, Charleroi, Liège, Ostend.
- Cochabamba, La Paz, Santa Cruz.
- Francistown, Gaborone, Gizanz, Kasane, Maun, Selebi Phikwe.
- Manaus, Porto Alegre, Recife, Rio de Janeiro-Galeao, Salvador, Sao Paulo-Guarulhos.
- Bobo Dioulasso, Ouagadougou.
- Land.
- Douala, Garoua, Yaoundé.
- Hong Kong Special Administrative Region.
- Alajuela, San Jose-Juan Santamaria, Guanacaste.
- Guayaquil, Quito.
- Alexandria, Aswan, Hurghada, Luxor, Sharm el Sheikh.
- Parking, catering, cleaning, duty-free, shops.
- Bale.Mulhouse, Lyon. Marseille, Nice, Paris-Ch.-de-Gaulle, Paris-Le Bourget, Paris-Orly, Toulouse.
- Berlin, Bremen, Dresden, Dusseldorf, Erfurt, Frankfurt, Hamburg, Hannover, Cologne/Bonn, Leipzig/Halle, Munich, Munster/Osnabruck, Nuremberg, Saarbrucken, Stuttgart.
- Catering, fuel services.
- Athens, Chania, Corfu, Heraklion, Kos, Rhodes, Thessaloniki, Zakynthos.
- Cork, Dublin, Shannon.
- Naples and Bologna.
- Kingston, Montego Bay.
- Shops.
- Osaka-Kansai, Tokyo-Narita.
- Airport run by government (CAA).
- Duty-free shops, catering, fuel, parking.
- Kaunas, Palanga, Siauliai, Vilnius.
- Acapulco, Cancun, Guadalajara, Mazatlan, Merida, Mexico City, Monterrey, Puerto Vallarta, San Jose del Cabo.
- Agadir, Al Hoceima, Casablanca-Mohamed V, Fez, Marrakesh, Ouarzazate, Oujda, Rabat.
- Katima Mulilo, Keetmanshop, Luderitz, Ondangwa, Rurdu, Walvis Bay, Windhoek (2 airports..)
- No private involvement
- Ground handling is provided to foreign carriers by the national carrier.
- Amsterdam, Eindhoven, Rotterdam.
- Auckland, Christchurch, Dunedin, Queenstown, Wellington.
- No private interests.
- Duty-free, restaurants, bars, commercial areas.
- Rostov-na-Donu, St Petersburg.
- Jeddah, Riyadh.
- Bratislava, Kosice, Poprad, Sliat, Piestany.
- Fuel
- Bloemfontein, Cape Town, Durban, East London, George, Johannesburg, Kimberley, Port Elizabeth, Upington.

43. Gothenburg, Malmo, Stockholm-Arlanda
  44. Bale/Mulhouse, Geneva, Zurich.
  45. Dushanbe, Khudzhand, Kurgan Tyube, Kulyab.
  46. Ohrid, Skopje.
  47. Djerba, Gafsa, Monastir, Sfax, Tabarka, Tozeur, Tunis.
  48. Duty-free shops.
  48. Aviation fuel and oil.
  50. Dniepropetrovsk, Donetsk, Kyiv-Borispol, Lvov, Odessa, Simferopol.
  51. Aberdeen, Belfast, Birmingham, Bristol, Cardiff, East Midlands, Edinburgh, Glasgow, London City, London-Gatwick, London-Heathrow, London-Stansted, Manchester, Newcastle.
  52. Dar es Salaam, Kilimanjaro.
  53. Atlanta, Chicago, Dallas, Los Angeles, New York-JF Kennedy, San Francisco.
  54. Hanoi, Ho Chi Minh City.
  55. Bulawayo, Buffalo Range, Charles Pr., Harare, Hwange, Kariba, Masvingo, Victoria Falls.
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**Appendix 4 to Chapter 1. Ownership and operation of air navigation services**  
(breakdown of Table 1-3 by responding States, in alphabetical order)

STATE	Ownership and operation												Charges collection	
	Govt.-owned autonomous entity		Directorate of Civil Aviation		Ministry or other govt. department		International operating agency		Privately owned entity		Other		Collects itself	Collected by another body agency
	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned		
Algeria	x												x	
Argentina		x			x								x	
Australia	x	x											x	
Azerbaijan			x			x							x	
Bahrain			x										x	
Bangladesh			x											
Barbados					x								x	
Belgium	x													(1)
Bolivia	x												x	
Botswana		x	x		x								x	(2)
Brazil	x				x					x			x	
Brunei Darussalam	x		x		x								x	
Bulgaria	x	x											x	(1)
Burkina Faso								x					x	(3)
Canada										x			x	
Chile			x	x									x	
China (Hong Kong SAR) (4)			x										x	
Costa Rica								x					x	
Cuba	x	x											x	(2)
Czech Republic	x	x											x	(1)
Ecuador			x										x	
Egypt			x										x	
Eritrea			x										x	
Estonia	x												x	(5)
Finland	x												x	
France			x	x									x	(1)
Gambia			x	x									x	
Georgia			x											(2)
Germany	x												x	(1)
Ghana			x										x	
Greece	x													(1)
Grenada	x							x					x	(6)

STATE	Ownership and operation												Charges collection	
	Govt.-owned autonomous entity		Directorate of Civil Aviation		Ministry or other govt. department		International operating agency		Privately owned entity		Other		Collects itself	Collected by another body agency
	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned		
Haiti			x	x										x
Iceland			x											(7)
Iran (Islamic Republic of)		x	x										x	
Ireland	x												x	(1)
Italy	x	x												
Jamaica			x										x	(2)
Jordan			x										x	
Kenya		x	x										x	
Kuwait		x	x										x	
Latvia	x							x					x	(1)
Lebanon			x										x	
Lesotho													x	
Lithuania			x		x	x				x			x	(1)
Maldives	x		x										x	
Malta	x													(1)
Mauritius			x										x	
Mexico					x	x							x	
Morocco	x												x	
Namibia		x	x		x									
Nepal	x												x	
Netherlands	x													(1)
New Zealand	x												x	
Nigeria	x	x												(8)
Norway	x	x												(1)
Oman					x									(2)
Pakistan	x												x	
Panama			x										x	
Poland		x										(9)	x	
Portugal	x													(1)
Qatar												(10)		(10)
Republic of Moldova			x											(1)
Romania	x												x	(1)
Russian Federation	x												x	
Saint Vincent and the Grenadines	x							x					x	(6)



**NOTES**

1. EUROCONTROL.
  2. IATA.
  3. ASECNA.
  4. Hong Kong Special Administrative Region.
  5. Collected by LGS (Latvian agency) regarding delegated area in the South-West part of the Tallinn FIR.
  6. PIRCO ACC (for flights above FL 210).
  7. NATS (United Kingdom).
  8. Aerocontrol.
  9. Airports State Enterprise.
  10. State of Bahrain.
  11. For specific projects.
  12. South Africa.
  13. State enterprise.
  14. Public/private partnership.
  15. Transition planned to semi-autonomous performance-based organization.
-

**Appendix 5 to Chapter 1. Provision of approach and  
aerodrome control services**  
(breakdown of Table 1-4 by responding States, in alphabetical order\*)

State	Airport administration itself	Provider of ATS en route	Other
Algeria		x	
Argentina		x	
Australia		x	
Azerbaijan		x	
Bahrain	x		
Bangladesh	x		
Barbados	x		
Belgium		x	
Bolivia		x	
Botswana		x	
Brazil	x	x	
Brunei Darussalam	x	x	
Bulgaria		x	
Burkina Faso		x	
Canada		x	
Chile		x	
China (Hong Kong SAR) (1)		x	
Costa Rica			(2)
Cuba		x	
Czech Republic		x	
Ecuador		x	
Egypt	x	x	
Eritrea	x		
Estonia	(3)	x	
Finland	x		
France		x	
Gambia	x		
Georgia		x	
Germany		x	
Ghana		x	
Greece		x	
Grenada	x		
Haiti		x	
Iceland	(4)	(4)	
Iran, Islamic Republic of		x	

\* excludes Lesotho and Zambia



State	Airport administration itself	Provider of ATS en route	Other
Ireland		x	(5)
Italy	x		
Jamaica		x	
Jordan		x	
Kenya		x	
Kuwait			(2)
Latvia		x	
Lebanon		x	
Lithuania		x	
Maldives	x		
Malta	x		(2)
Mauritius			
Mexico		x	
Morocco	x		
Namibia		x	
Nepal	x		
Netherlands		x	
New Zealand		x	
Nigeria		x	
Norway	x		
Oman	x		
Pakistan	x		
Panama		x	
Poland		x	
Portugal		x	
Qatar			(2)
Republic of Moldova		x	
Romania		x	
Russian Fed.	x		
Saint Vincent and the Grenadines	x		
Sao Tome and Principe	x		
Saudi Arabia	x		
Senegal		x	
Singapore	x		
Slovakia		x	
Slovenia		x	
South Africa		x	
Spain		x	
Sri Lanka	x		
Swaziland	x		

State	Airport administration itself	Provider of ATS en route	Other
Sweden		x	
Switzerland		x	
Tajikistan		x	
Thailand		x	
The Former Yugoslav Republic of Macedonia		x	
Tunisia	(4)	(4)	
Turkey		x	
Turkmenistan	x	x	
Uganda		x	
Ukraine		x	
United Kingdom	x	x	(6)
United Republic of Tanzania	(7)	(8)	
United States		x	
Uruguay	x		
Uzbekistan		x	
Viet Nam		x	
Zimbabwe			(2)

**NOTES**

1. Hong Kong Special Administrative Region.
2. Provided by Directorate of Civil Aviation.
3. Provided by airport administration at domestic airports.
4. Provided by the same organization.
5. Provided by the Air Force in military airports opened to civil aviation.
6. These services are provided by airports, ATS service providers and other organizations.
7. For one international airport.
8. For the other airports.

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**Appendix 6 to Chapter 1. Provision of other air navigation services  
by the ATS provider**

(breakdown of Table 1-5 by responding States, in alphabetical order\*)

State	Aeronautical telecommunication services (COM)	Meteorological services (MET)	Search and rescue services (SAR)	Aeronautical information services (AIS)
Algeria	x		x	x
Argentina	x	x	x	x
Australia	x			x
Azerbaijan	x	x	x	x
Bahrain	x	x	x	x
Bangladesh	x		x	x
Barbados	x	x	x	x
Belgium	x		x	x
Bolivia	x	x	x	x
Botswana	x		x	x
Brazil	x	x	x	x
Brunei Darussalam			x	x
Bulgaria	x	x		x
Burkina Faso	x	x	x	x
Canada	x	x		x
Chile	x	x		x
China (Hong Kong SAR) (1)	x		x	x
Costa Rica	(2)	(2)	(2)	(2)
Cuba	x	x	x	x
Czech Republic	x		x	x
Ecuador	x	x	x	x
Egypt	x			x
Eritrea	x	x		x
Estonia	x			x
Finland	x	x	x	x
France	x		x	x
Gambia	x		x	x
Georgia	x			x
Germany	x			x
Ghana	x		x	x
Greece	x			x
Grenada	x			
Haiti	x		x	x
Iceland			x	x
Iran (Islamic Republic of)	x		x	x

\* excludes Lesotho and Zambia

State	Aeronautical telecommunication services (COM)	Meteorological services (MET)	Search and rescue services (SAR)	Aeronautical information services (AIS)
Ireland	x			x
Italy	x	x	x	x
Jamaica	x	x	x	x
Jordan	x		x	x
Kenya	x		x	x
Kuwait	x	x	x	x
Latvia			x	x
Lebanon	x	x	x	x
Lithuania	x			x
Maldives	x		x	x
Malta	x	x		x
Mauritius	x		(3)	x
Mexico	x	x		x
Morocco	x			x
Namibia	x	x	x	x
Nepal	x		x	x
Netherlands	x			x
New Zealand	x	x	x	x
Nigeria	x			
Norway	x			x
Oman	x	x	x	x
Pakistan	x		x	x
Panama	x	x	x	x
Poland	x	x		x
Portugal	x			x
Qatar	x	x	x	x
Republic of Moldova	x	x		x
Romania	x	x		
Russian Federation	x	x	x	x
Saint Vincent and the Grenadines	x			
Sao Tome and Principe	x		x	x
Saudi Arabia	x		x	x
Senegal	x	x		x
Singapore	x		x	x
Slovakia	x		x	x
Slovenia	x		x	x
South Africa	x		x	x
Spain	x			x
Sri Lanka	x		x	x
Swaziland	x	x	x	x

State	Aeronautical telecommunication services (COM)	Meteorological services (MET)	Search and rescue services (SAR)	Aeronautical information services (AIS)
Sweden	x	x	x	x
Switzerland	x			x
Tajikistan	x	x	x	x
Thailand	x			x
The Former Yugoslav Republic of Macedonia	x	x	x	x
Tunisia	x		x	x
Turkey			x	x
Turkmenistan	x		x	x
Uganda	x		x	x
Ukraine	x			x
United Kingdom	x			x
United Republic of Tanzania	x		x	x
United States	x	x	(4)	x
Uruguay	x	x	x	x
Uzbekistan	x			x
Viet Nam	x		x	x
Zimbabwe	x		x	x

#### NOTES

1. Hong Kong Special Administrative Region.
  2. None of these services is provided by the ATS provider.
  3. In collaboration with the National Coast Guard and other government agencies.
  4. Some support is provided by the Federal Aviation Administration (FAA) to state and local governments that are responsible for SAR services. The US Coast Guard provides SAR within US territorial waters.
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# Chapter 2

## FINANCIAL SITUATION OF AIRPORTS AND AIR NAVIGATION SERVICES

### BACKGROUND

2.1 This chapter presents information on the financial situation of airports and air navigation services. It is based on data for the year 1998 (or in some instances 1997 or 1999), and is composed of three sections: 1) financial aspects of international airport operations; 2) financial aspects of air navigation services operations; and 3) financial situation of scheduled airlines and the impact of airport and air navigation services charges. Where relevant and possible, comparisons are made with the results of a similar study prepared for the 1991 Conference on Airport and Route Facility Management (CARFM) based on data for 1989 (or in some instances 1988 or 1990).

### SECTION 1 — FINANCIAL ASPECTS OF INTERNATIONAL AIRPORT OPERATIONS

#### **Coverage**

2.2 The basis for the analyses in this section are financial data covering 300 airports or groups of airports<sup>1</sup> provided by 92 States. Both income and expense data were available for 281 airports (or groups of airports). The data were obtained from ICAO Air Transport Reporting Form J — *Airport Financial Data* and in response to the pre-conference questionnaire. The traffic data used were essentially those provided under the ICAO Statistics Programme on ICAO Air Transport Reporting Form I — *Airport Traffic*; traffic data were not available for 61 airports (or groups of airports).

2.3 An important limitation of the analysis is that in many instances the data, in particular for expenses, were incomplete. For example, depreciation and other capital costs, which are major expenses for capital-intensive enterprises such as airports, in some instances were not reported or unexpectedly low amounts were reported. Similarly, all or nearly all the expenses for areas such as approach and aerodrome control (often provided by the same entity that provides en-route services and included in the financial data for air navigation services) and for meteorological services were not reported in many instances. For these reasons and because of the different organizational structures under which airports operate, comparisons were not made between individual airports.

2.4 The number of airports for which data were reported is not high considering that the ICAO Regional Air Navigation Plans listed 1 178 airports as being open to international traffic in 1998. However, the data provided refer essentially to the major international airports<sup>2</sup> in States which in 1998 accounted for 91 per cent of the total number of passengers carried by the world's scheduled airlines, and 87 per cent of their international passenger traffic.

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1. Refers to four cases with groups of airports where the number of airports in the group was not indicated.

2. Where consolidated data was provided for a group of airports, it is possible that the group included airports serving domestic traffic only.



**Table 2-1. Total airport income in relation to total reported expenses (1998)**

Regions	Number of States	Number of airports	Number of airports with income less than reported expenses				Number of airports with income exceeding reported expenses				
			0 to 49%	50 to 74%	75 to 99%	Sub-total	100 to 124%	125 to 149%	150 to 174%	175% and over	Sub-total
Africa	19	69	10	3	12	25	6	1	11	26	44
Asia, Middle East and the Pacific	24	40	3	1	7	11	8	6	4	11	29
Central America, the Caribbean and South America	12	50	1	2	1	4	5	22	3	16	46
Europe	33	106	4	7	7	18	37	21	15	15	88
North America	2	16	2	1	2	5	6	2	3	0	11
Total sample	90	281	20	14	29	63	62	52	36	68	218

**Table 2-2. Total airport income in relation to total expenses for 77 airports for which such data were reported in both 1989 and 1998**

Year	Number of airports with Income less than reported expenses				Number of airports with Income exceeding reported expenses				
	0 to 49%	50 to 74%	75 to 99%	Sub-total	100 to 124%	125 to 149%	150 to 174%	175% and over	Sub-total
1989	4	6	15	25	25	7	3	17	52
1998	3	2	7	12	16	13	19	17	65

**Table 2-3. Non-aeronautical income, as a percentage of total income and on a per passenger basis, for airports where such data were reported in both 1989 and 1998**

Regions	Number of States	Income from non-aeronautical activities			Income from non-aeronautical activities		
		Number of airports	Percentage of total income		Number of airports	Per passenger U.S.\$ (current prices)	
			1989	1998		1989	1998
World	31	78	34	36	53	3.86	5.22
Africa, Asia, Pacific and Middle East	13	23	30	35	9	2.69	4.51
Caribbean, Central and South America	5	16	21	18	10	2.14	1.93
Europe	12	31	38	45	30	4.76	6.84
North America	1	8	52	44	4	4.65	4.07

2.5 At the same time, the data used for this study provide better coverage than the data available for the study prepared for the 1991 CARFM Conference. At that time, financial data were available for 297 airports or groups of airports in 69 States (including consolidated revenue data for 71 airports in the United States) which in 1989 accounted for approximately 71 per cent of the total number of passengers carried by the world's scheduled airlines, and for about 78 per cent of their international passenger traffic.

### **Analysis of data**

2.6 For airports, for which total income and expenses as well as traffic data were reported, the total income was \$12 693 per traffic unit and total expenses \$10 414 per traffic unit (one traffic unit corresponds to 1 000 passengers or 100 tonnes of freight or mail). Airports with less than 50 traffic units were not included in these calculations. Total income expressed as a percentage of total expenses broken down by region is presented in Table 2-1 (see also Appendix 2 to this chapter for a breakdown of income and expenses by airport). The table indicates that for 218 airports or groups of airports (more than three quarters of the total), income exceeded or was equal to expenses in 1998. By comparison, in the 1989 pre-CARFM study only 92 airports (a third of the total concerned) showed income in excess of expenses. As was the case in the pre-1991 CARFM study, *the large majority of airports showing revenues to exceed expenses by 175 per cent or more appear not to have reported all their expenses.*

2.7 The data reported showed a relationship between the volume of traffic and cost efficiency. Thus for airports with less annual traffic than 300 traffic units, expenses per traffic unit averaged \$16 000; for airports with traffic between 300 and 2 500 traffic units the average was about \$10 400; and for airports with traffic between 2 500 and 25 000 traffic units the average was about \$8 200. Airports with traffic exceeding 25 000 units were very few (only 16) and showed a wide range (from \$3 000 to \$40 000). These averages should be viewed with caution, because of the incomplete expense data.

2.8 Table 2-2 compares total income as a percentage of total expenses for the 77 airports in 30 States for which these data were available for both 1989 and 1998. The table confirms the continued improvement in the financial situation for the sample as a whole. Only 12 of the 77 airports did not cover their expenses in 1998 compared to 25 airports in 1989. For all the airports in the sample, total income expressed in U.S. dollars grew faster, at an average annual rate of 7.8 per cent, than did expenses at 6.3 per cent per annum. Also, further analysis gives clear indications that expenses per traffic unit were on average lower for airports operated by autonomous entities than for other airports of comparable size.

2.9 Operating subsidies were reported by 20 States for 62 airports and groups of airports. These included States in Europe and North America with major aviation activities. In the previous survey, subsidies were reported by 11 States for 121 airports or groups of airports (including the grouping of 71 airports in the United States).

2.10 Income from ground handling charges was reported by 39 States, mainly located in Africa (9 States) and Europe (23 States), covering 112 airports or groups of airports. The income from ground handling charges accounted on average for 16 per cent of total income for these airports.

2.11 Income from non-aeronautical activities, which includes all revenues from concessions and rentals together with all "other" income which is not directly related to air traffic operations, accounted on average for 34 per cent of total income per airport. This percentage was highest in North America, with an average of 56 per cent for each airport, while Africa and Central and South America showed the lowest regional averages (21 to 22 per cent). (North American airports do not themselves provide air traffic services which reduces their charges on air traffic and thereby increases the share accounted for by non-aeronautical revenues). Many international European airports and major airports in Asia and the Pacific and the Middle East

showed shares of around 50 per cent or higher. Airports with high traffic volumes generally have higher shares of non-aeronautical income; for example, the average for airports with more than 25 000 traffic units was 58 per cent.

2.12 Table 2-3 compares non-aeronautical income for the airports for which such income was reported both in 1989 and 1998 (see also Appendix 2 to this chapter for details of non-aeronautical income by airport). The table shows that the average percentage of the total income accounted for by such income increased slightly from 34 per cent in 1989 to 36 per cent in 1998. It increased in all regions except for North America, Caribbean, Central and South America (however, the sample for North America was limited to one State). Average non-aeronautical income per passenger worldwide increased from \$3.86 to \$5.22 during that period in current prices, but only marginally in real terms (from \$5.07 in 1989 to \$5.22 in 1998 calculated in 1998 prices)<sup>3</sup>. Non-aeronautical income per passenger was highest in Europe at \$6.84; however, 1998 was the last full year when passengers travelling between European Union member States were entitled to duty-free purchases, the concessions for which are a major source of non-aeronautical income.

2.13 Capital costs, including depreciation/amortization and interest were reported for 198 airports (or groups of airports) or about two thirds of the total airports covered. Comparing capital costs to total expenses shows that on average capital costs accounted for 27 per cent of total airport expenses, up from the 20 per cent they constituted in the pre-1991 CARFM study (when 147 airports or groups of airports, about half of the responding total, did not report any depreciation or amortization expenses). The average share of capital costs was higher for airports in Asia and the Pacific and North America (35 to 40 per cent) than for airports in other regions, while it was on average lowest for airports in Central and South America (13 per cent). In Europe, the average was 25 per cent. Of interest was the direct relationship between the share that capital costs constituted of total expenses and traffic volume. For airports with up to 5 000 air traffic units, that share was on average below 25 per cent of expenses; for airports with 5 000 to 25 000 traffic units, the share was around 30 per cent, while for the largest airports (more than 25 000 traffic units) it exceeded 40 per cent.

2.14 Capital investments were reported for 227 airports in 71 States (see Table 2-4). The gross capital investments for these airports amounted to \$7 730 million during 1998, or \$6 376 per traffic unit. In 1998 these States accounted for 46 per cent of the total number of passengers carried by the world's scheduled airlines, and 67 per cent of their international passenger traffic. The average was strongly influenced by a handful of airports in Asia and the Middle East undertaking major investment programmes. The averages for other regions were well below \$5 000 per traffic unit.

**Table 2-4. Capital investments at 227 airports (1998)**

Regions	Number of States	Number of airports	Total capital investments (thousands of dollars)	Capital investments per traffic unit (thousands of dollars)
Africa	16	63	318 708	4 020
Asia, Pacific and the Middle East	15	25	3 397 344	12 626
Caribbean, Central and South America	10	23	176 688	2 197
Europe	29	106	3 534 437	4 824
North America	1	10	302 476	4 189
Total sample	71	227	7 729 653	6 376

3. The Consumer Price Index (CPI) for the United States increased from 100 in 1989 to 131.4 in 1998.

**Table 2-5. Total route facility income in relation to total reported expenses (1998)**

Regions	Number of States	Number of States with income less than reported expenses				Number of States with income exceeding reported expenses				
		0 to 49%	50 to 74%	75 to 99%	Sub-total	100 to 124%	125 to 149%	150 to 174%	175% and over	Sub-total
Africa, Asia, Middle East and the Pacific	19	1	0	1	2	10	2	2	3	17
Caribbean, Central and South America <sup>1)</sup>	11	1	1	2	4	2	1	0	4	7
Europe	29	0	0	8	8	14	3	3	1	21
North America	1	0	0	0	0	1	0	0	0	1
Total sample	60	2	1	11	14	27	6	5	8	46

1. Includes COCESNA (6 States)

## Conclusions

2.15 The data provided show that there has been a clear improvement in the financial situation of airports over the last decade. However, it is also apparent that for many airports around the world capital costs are not included at all or only partly included in their accounts, whereas other costs frequently are included. Taking that into account, it can be assumed that the majority of international airports for which no data were reported, and which generally have low volumes of traffic, still operate at a loss.

## SECTION 2 — FINANCIAL ASPECTS OF AIR NAVIGATION SERVICES OPERATIONS

### Coverage

2.16 The basis for the analyses in this section are air navigation services financial data provided by 78 States and traffic data provided by 70 of these States for 1998 (or in some instances 1999). The data were provided on ICAO Air Transport Reporting Forms K (financial data) and L (traffic data) or in response to the pre-conference questionnaire.

2.17 In 1998 the airlines of the 78 reporting States accounted for 81 per cent of the total tonne-kilometres performed by the world's scheduled airlines on scheduled and non-scheduled flights on domestic and international services and 80 per cent of the international tonne-kilometres performed. By comparison, data were provided by 57 States accounting for close to 70 per cent of total international tonne-kilometres performed when the comparable analysis was carried out for 1989.

### Analysis of data

2.18 Table 2-5 shows that income equalled or exceeded expenses in 52 of the 66 States reporting both income and expense data, a considerable improvement over 1989 when only 24 out of 49 States showed income that exceeded expenses (see also Appendix 2, which provides the breakdown of income and expenses by States that responded to the questionnaire). The situation has improved in all regions and is primarily explained by the growing emphasis States at large are placing on recovering their air navigation services costs.

Also of relevance is the continued growth of air traffic and an increase in the number of States levying approach and aerodrome control charges. However, *as with airport data, very high ratios of income over expenses may primarily be accounted for by less complete identification and reporting of expenses than of income.*

2.19 Table 2-6 compares total income as a percentage of total expenses for the 28 States for which such data were available for both 1989 and 1998. The table confirms the improvements that have taken place since 1989 when only 9 of the 28 States (as opposed to 20 States in 1998) reported income in excess of their total expenses. Between 1989 and 1998, income for these States increased at an annual rate of 13 per cent compared with 7 per cent for expenses. More detailed analysis indicates that expenses per flight tended to be lower in States where the provision of air navigation services was vested in an autonomous entity.

2.20 Air navigation services charges accounted for an average of 97 per cent of the total income for each of the 70 States for which this information was available for 1998. In eight instances the other income consisted only of, or included, grants and subsidies. Forty-four States reported air navigation services charges as the only income source. For the 31 States reporting approach and aerodrome control charges, the income from this source accounted on average for 24 per cent of total income from charges.

2.21 Of the 69 States for which total expense data were available for 1998, 53 reported depreciation and/or amortization, which for these States accounted on average for 18 per cent of total expenses. This is a marked change from 1989 when depreciation reported by 39 States averaged 9 per cent of total expenses. These developments can be assumed to reflect the considerable investments in new air navigation facilities around the world and a growing awareness of the need to allow fully for depreciation in the accounts of air navigation services providers. Nevertheless, since cost data on depreciation and/or amortization were still not available (or not reported) in several instances, the question again arises as to the extent to which many States are allowing for this important cost item when establishing the cost basis for their air navigation services charges, and thereby building reserves for facility renewal and expansion.

2.22 For 1998, 28 States reported capital investments on ICAO Reporting Form K. For these States the gross capital investments accounted for \$1 642 million, which corresponded to \$139 per flight.

2.23 From the data available on costs by category of service, air traffic services (ATS) and communications (COM) combined accounted for the major share of total expenses, ranging in most States between 70 and 95 per cent. The share accounted for by meteorological services (MET) was also of significant magnitude and generally varied between 5 and 20 per cent. The share of aeronautical information services (AIS) costs accounted on the average for 5 per cent. Search and rescue (SAR) costs, which were reported by a very small number (14) of States, ranged with a few exceptions between 0 and 3 per cent of total expenses. Compared to 1989, ATS and COM costs combined appear to have continued to grow in relative (as well as absolute) terms while the relative share of MET has declined slightly.

**Table 2-6. Total route facility income in relation to total expenses for 28 States for which such data were reported in both 1989 and 1998**

Year	Number of States with income less than reported expenses				Number of States with income exceeding reported expenses				
	0 to 49%	50 to 74%	75 to 99%	Sub-total	100 to 124%	125 to 149%	150 to 174%	175% and over	Sub-total
1989	8	3	8	19	6	0	1	2	9
1998	1	1	6	8	14	3	0	3	20

**Table 2-7. World's scheduled airlines total scheduled traffic (1989-1998)**

	Unit	1989	1998	Average annual growth rate 1989-1998 (per cent)
Aircraft departures	[000]	14 090	19 690	3.8
Passengers carried	[000]	1 118 840	1 470 730	3.1
Passenger load factor	%	68	68	–
Total tonne-km performed	Millions	212 110	348 470	5.7
Total tonne-km available	Millions	349 190	584 170	5.9
Average aircraft payload capacity	Tonnes	25.7	26.0	0.1

2.24 With regard to the recovery of costs of providing MET services, it appears that many States may not take these costs into account when establishing the cost basis for their air navigation services charges. This is probably because MET services are usually performed by another branch of government or entity, separate from that involved in providing ATS and COM services. A similar situation applies to SAR costs.

### **Conclusions**

2.25 The data available indicate that the financial situation of air navigation services has shown considerable improvement in the last decade. However, major cost components such as depreciation or amortization are frequently not included and the same applies to MET costs, a significant category of service. Bearing this in mind, it may be assumed that the majority of States for which no data were reported and which generally have low volumes of traffic do not recover the full costs of providing air navigation services.

## **SECTION 3 — FINANCIAL SITUATION OF SCHEDULED AIRLINES AND THE IMPACT OF AIRPORT AND AIR NAVIGATION SERVICES CHARGES**

### **Development of traffic**

2.26 The total scheduled traffic of the world's scheduled airlines, measured in revenue tonne-kilometres performed, increased at an average annual rate of 5.7 per cent over the period 1989 to 1998 (see Table 2-7). During the same period, the number of aircraft departures increased at a much lower rate (3.8 per cent per annum), reflecting an increase in average payload capacity (from 25.7 tonnes in 1989 to 26.0 tonnes in 1998). Passengers carried on scheduled flights increased at an average rate of 3.1 per cent over the period.

### **Airline financial results**

2.27 The financial situation of the world's scheduled airlines, international and domestic combined, is summarized in Table 2-8 for the period 1989 to 1998. Over this period, operating revenues in U.S. dollars increased at a slightly higher annual rate (5.8 per cent) than did total operating expenses (5.7 per cent). Operating results expressed as a percentage of operating revenues fluctuated, with an operating result of 4.3 per cent in 1989 followed by losses of 0.8, 0.2 and 0.8 per cent during the following three years, and then rose to reach a positive 5.4 per cent in 1998. Net results (profit or loss after income tax expressed as a

percentage of operating revenues) were 2 per cent in 1989, followed by losses during the subsequent five years (bottoming out at –3.6 per cent in 1992), and then rising to a positive 2.8 per cent in 1998. These results for the world's scheduled airlines as a whole do not portray the considerable differences in the financial results of individual airlines.

#### **Airport and route facility charges<sup>4</sup>**

2.28 Table 2-9 shows the changes in absolute terms and as a percentage of total operating expenses of airport and route facility charges between 1989 and 1998. The costs of landing and associated airport charges<sup>5</sup> levied on the international and domestic services of the world's scheduled airlines increased from \$6 290 million in 1989 to \$12 400 million in 1998, representing an average annual increase of 7.8 per cent (see Table 2-9). This results from the increase in air traffic during this period in terms of aircraft departures (an average growth of 3.8 per cent per annum), aircraft size and increased levels of charges. As a consequence, landing and associated airport charges as a proportion of total operating expenses rose from 3.7 per cent in 1989 to 4.4 per cent in 1998, to a certain extent reflecting the fluctuation in oil price as fuel is a major cost component for aviation.

2.29 The costs of route facility charges paid by the airlines increased from \$2 560 million in 1989 to \$8 510 million in 1998, an average annual rate of 14.3 per cent. This reflects not only the increase in the number of States introducing air navigation services charges during this period, but also the efforts of States already levying such charges to recover a higher share of their costs of providing air navigation facilities and services. As a proportion of total operating expenses, en route charges increased from 1.5 per cent in 1989 to 3.0 per cent in 1998. The proportion of airline expenditure for airport and route facility charges combined thus increased from 5.2 per cent of total operating expenses in 1989 to 7.3 per cent in 1995 and then stabilized at 7.5 per cent in 1998.

**Table 2-8. Financial situation of world's scheduled airlines' international and domestic services total scheduled and non-scheduled operations (1989-1998)**

Item	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average annual increase 1989-1998 %
	Millions of dollars										
Total operating income	177 800	199 500	205 500	217 800	226 000	244 700	267 000	282 500	291 000	295 500	5.8
Total operating expenses	170 200	201 000	206 000	219 600	223 700	237 000	253 500	270 200	274 700	279 600	5.7
Operating result	7 600	–1 500	–500	–1 800	2 300	7 700	13 500	12 300	16 300	15 900	–
Net result	3 500	–4 500	–3 500	–7 900	–4 400	–200	4 500	5 300	8 550	8 200	–
	Percentage of total operating revenues										
Operating result	4.3%	–0.8%	–0.2%	–0.8%	1.0%	3.1%	5.1%	4.4%	5.6%	5.4%	–
Net result	2.0%	–2.3%	–1.7%	–3.6%	–1.9%	–0.1%	1.7%	1.9%	2.9%	2.8%	–

4. The discussion of air navigation services charges in this section is limited to route facility charges, since for 1998 airlines were still only required to report such charges but not all air navigation services charges separately. Expenses for approach and aerodrome control are included in the cost basis for landing charges at a major share of airports but the application of separate approach and aerodrome control charges is growing.

5. User charges paid directly by passengers to airports, which are substantial in global terms, are not included.

**Table 2-9. Impact of airport and route facility charges for international and domestic services of scheduled airlines' total scheduled and non-scheduled operations (1989-1998)**

Item	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Average annual change 1989-98 (%)
	Millions of dollars										
Landing and associated airport charges	6 290	7 730	8 160	8 460	9 260	10 480	11 440	11 600	11 210	12 400	7.8
Route facility charges	2 560	3 250	4 050	5 240	5 390	6 280	7 080	7 200	7 570	8 510	14.3
Total airport and route facility charges	8 850	10 980	12 210	13 700	14 650	16 760	18 520	18 800	18 780	20 910	10.0
	Percentage of total operating expenses										
Landing and associated airport charges	3.7	3.8	4.0	3.9	4.1	4.4	4.5	4.3	4.1	4.4	–
Route facility charges	1.5	1.6	2.0	2.4	2.4	2.6	2.8	2.7	2.8	3.0	–
Total airport and route facility charges	5.2	5.5	5.9	6.2	6.5	7.1	7.3	7.0	6.8	7.5	–
	Millions of tonne-kilometres available										
Total tonne-km available (scheduled and non-scheduled services)	350 760	375 760	378 560	417 840	436 970	472 850	510 750	553 090	594 230	617 300	6.5
	Cents per tonne-kilometre available										
Total operating expenses	48.5	53.5	54.4	52.6	51.2	50.1	49.6	48.9	46.2	45.3	–0.8
Landing and associated airport charges	1.79	2.06	2.16	2.03	2.12	2.22	2.24	2.10	1.89	2.01	1.3
Route facility charges	0.73	0.86	1.07	1.25	1.23	1.33	1.39	1.30	1.27	1.38	7.3
Total airport and route facility charges	2.52	2.92	3.23	3.28	3.35	3.54	3.63	3.40	3.16	3.39	3.4



2.30 In terms of unit operating expenses per tonne-kilometre available, landing and associated airport charges increased from 1.79 cents in 1989 to 2.24 cents in 1995 and thereafter declined to 2.01 cents in 1998. On average this represented an annual increase of 1.3 per cent. Route facility charges increased from 0.73 cents per tonne-kilometre in 1989 to 1.39 cents in 1995 and then stabilized at 1.38 cents in 1998; this represented an average annual increase of 7.3 per cent. In real terms, unit operating expenses per tonne-kilometre available for landing and associated airport charges fell by 15 per cent over the 1989-1998 period, while those of the route facility charges rose by 44 per cent. Total airline expenditure on airport and route facility charges per tonne-kilometre available increased from 2.52 cents in 1989 to 3.63 cents in 1995 and then declined to 3.39 cents in 1998; this represented an average annual increase of 3.4 per cent. (By comparison, in real terms total operating expenses per tonne-kilometre available fell by 29 per cent (25 per cent if fuel is excluded) over the period 1989 to 1998.)

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**Appendix 1 to Chapter 2. Airport revenues, expenses and traffic data, 1998**  
(in thousands of dollars)

STATE City/Airport(s)	Total traffic units	INCOME									EXPENSES					Operating subsides
		Charges on air traffic operations	Ground handling charges	Concessions				Rentals	Other revenues	Total income	Operation and main- tenance	Adminis- trative overheads	Other non- capital costs	Capital costs	Total expenses	
				Total	Fuel oil	Duty free	Car park									
<b>ALGERIA</b>																
Alger (1)	2 854	5 486	1 450	71	71			2 481	780	10 269	8 040	1 151	5	1 023	10 220	25
Constantine (2)	657	2 432	206					197	199	3 034	2 490	197	12	324	3 022	
Oran (2)	775	2 200	425	14				54	572	3 265	2 938		137	732	3 807	
Tlemcen (2)	98	178	66	2				12	12	271	137			12	149	
<b>ARGENTINA</b>																
Buenos Aires/Aeroparque	7 009	17 040		2 950					22	20 011	2 235	6 057		1 191	9 484	
Buenos Aires/Ezeiza	7 285	68 237						15 738		83 975	3 735	10 797		12 738	27 270	
<b>AUSTRALIA</b>																
Brisbane	10 414	22 691		24 780	1 504	15 285	7 991	25 490	6 044	79 005	8 081	4 162	9 396	69 668	91 307	
Melbourne	15 755	30 702		38 378				28 144		97 223	29 423			84 431	113 853	
Perth	5 242	11 960		12 477	37	7 460	4 980	12 534	5 217	42 188	3 975	2 814	8 431	43 866	59 085	
Sydney	24 195	61 818		86 168		57 374	28 794	38 985	3 290	190 262	48 143		18 103	64 324	130 569	
<b>AUSTRIA</b>																
Vienna	11 639	124 715	141 021	17 840	4 924		12 916	20 746	30 917	335 238	173 714		50 693	46 577	270 984	
<b>AZERBAIJAN</b>																
Baku		6 777	13 048					11	894	20 731	5 711			3 194	8 905	
<b>BAHRAIN</b>																
Bahrain	4 253	28 866		2 231	83	1 985	163	1 618	2 628	35 344	1 677	14 995	10 374	10 279	37 325	
<b>BANLGADESH</b>																
Dhaka	3 146	31 340						1 347	4 313	36 999	2 278	8 653		3 949	14 879	
<b>BELGIUM</b>																
Brussels	24 365	145 889		62 941	9 027	44 144	9 770	8 394	41 419	259 881	155 934			84 627	240 561	
Charleroi (2)	211	1 103	731	1 978	942	907	129	979	12	4 802	2 934	2 192	561	1 143	6 830	1 614
Liege (1)	1 794	2 911	37	552	552			881	850	5 231	3 064	3 439	2 386	1 371	10 258	5 908
<b>BRAZIL</b>																
Manaus (1)	2 145	24 314						3 426	1 518	29 258	19 795	3 502	5 150	3 806	32 253	
Porto Alegre	3 182	19 288						5 492	1 277	26 058	13 026	4 440	21 161	2 084	40 712	

STATE City/Airport(s)	Total traffic units	INCOME									EXPENSES					Operating subsidiaries
		Charges on air traffic operations	Ground handling charges	Concessions				Rentals	Other revenues	Total income	Operation and main- tenance	Adminis- trative overheads	Other non- capital costs	Capital costs	Total expenses	
				Total	Fuel oil	Duty free	Car park									
Recife	2 965	13 288						5 355	1 255	19 898	14 490	3 178	8 515	3 814	29 997	
Salvador	3 280	13 372						4 765	1 274	19 410	8 739	1 616	2 763	1 972	15 091	
Sao Paulo	18 366	203 193						69 764	14 291	287 248	97 546	16 200	21 033	16 964	151 744	
BULGARIA																
Sofia	1 331	8 527	4 763	3 063				442	6 633	23 427	6 063	117	3 969	6 511	16 660	
BURKINA FASO																
Bobo-Dioulasso (1)	19	76								76						
Ouagadougou (1)	255	1 942		74	74			144	64	2 225	2 330				2 330	364
CAMEROON																
Consolidated data (3 airports) (2)	1 052	5 699	5 498	374	132			1 049	3 080	15 700	12 121		3 305	492	15 918	
CANADA																
Calgary	7 675	30 659		15 243				3 595	3 545	53 042	16 805	392	14 652	3 525	35 375	
Edmonton (1)	4 053	11 715		7 997	89			956	9 614	30 281	16 705		3 812	4 248	24 765	
Gander (2)	596	1 948		421	6			421	98	2 887	3 879	1 641		3 003	8 523	
Halifax (1)	3 213	8 916		5 119	24			964	137	15 136	9 013	1 511		7 242	17 766	
Montreal/Dorval	7 914	27 689		32 191	31			6 346	23 168	89 394	23 864	11 641	8 229	19 048	62 781	
Montreal/Mirabel	1 189	4 344		5 704	14			1 422	1 292	12 762	12 754	4 989	2 165	7 461	27 368	
Ottawa (1)	3 111	12 827		3 341	23			1 974	4 397	22 539	10 664	1 082	6 232	1 636	19 614	
Toronto	26 745	198 408		32 776				16 829	2 073	250 085	87 131		94 913	47 522	229 566	
Vancouver	15 708	85 125		38 256				10 568	18 874	152 823	42 101		37 712	29 455	109 268	
Winnipeg	1 998	9 141		2 577	66			2 137	3 250	17 105	10 843	1 004	1 862	806	14 515	
CHILE																
Consolidated data (20 airports)		80 195		8 763	3 054	5 351	358	54	27 922	116 934	61 659	5 860	11 328	990	79 837	
CHINA																
Hong Kong	43 752	221 560		241 184					10 280	473 025	237 592	44 653		241 290	523 534	
Macau (1)	2 867	20 208		9 804	125			4 824	4 289	39 125	31 539	6 984	52	66 709	105 283	15 620
COSTA RICA																
Consolidated data (4 airports)	3 070	13 398		267	14	253		938	2 926	17 529	3 344	3 712	0	2 632	9 689	

STATE City/Airport(s)	Total traffic units	INCOME									EXPENSES					Operating subsidiaries
		Charges on air traffic operations	Ground handling charges	Concessions				Rentals	Other revenues	Total income	Operation and main- tenance	Adminis- trative overheads	Other non- capital costs	Capital costs	Total expenses	
				Total	Fuel oil	Duty free	Car park									
CUBA Havana	2 221	26 781	8 214	14 138	12 638	1 200	300	2 160	214	51 506	27 319	3 552	1 280	15 910	48 061	
CZECH REPUBLIC Karlovy Vary (1)	13	141	42	1				9	370	562	442		1	105	548	4
Ostrava	101	848	369	34				184	518	1 953	2 048	1	11	698	2 758	80
Prague	4 586	40 262	25	6 832	865			6 448	12 043	65 609	30 198	228	3 806	23 910	58 143	
DENMARK Copenhagen	20 231	114 361		95 281				20 913	16 521	247 076	108 382			59 673	168 055	
E CUADOR Quito	1 834	28 904		2 229				2 157	2 201	35 491	15 507				15 507	
EGYPT Cairo	8 582	35 116		14 723				2 378	3 023	55 240	18 903	148	19 211	19 441	57 704	
Consolidated data (5 airports) (1)	4 644	13 641	389					930		14 960	4 664			34 518	54 143	14 960
EL SALVADOR El Salvador Int'l	1 322	14 077		1 954				1 611	3 280	20 922	8 511	1 217	77	3 998	13 803	
San Salvador/Ilopango		15						10	5	30	160	499			659	
ESTONIA Tallinn	576	5 983	937	433				554	830	8 736	3 548	582	1 086	2 470	7 686	
FINLAND Helsinki	10 363	79 739		703	703			20 788	32 558	133 788	34 397	8 562	24 925	36 557	104 442	
FRANCE Lyon	5 492	27 868		11 103				5 018	20 366	64 356	40 908	946	2 761	18 456	63 070	1 015
Marseille	6 065	21 590		9 548				5 473	19 650	56 261	40 170	1 705	3 124	23 282	68 281	663
Nice	8 261	33 957	266	20 138				6 837	26 547	87 745	41 776	2 523	6 436	47 467	98 202	456
Paris (3 airports)	75 715	476 497	284 984	280 412			87 205	138 513	164 420	1 344 827	856 138		150 535	316 988	1 323 660	2 540
Toulouse	5 024	19 806	4 204	6 984				3 439	10 854	45 287	23 225	1 468	4 106	15 732	44 531	159
FRANCE/SWITZERLAND Bâle-Mulhouse	3 687	25 155		3 849				9 193	17 178	55 375	29 515		2 582	24 133	56 230	
GAMBIA Banjul	327	4 406	87	801	612	157	31	114	139	5 548	2 311	917	319	1 958	5 505	

STATE City/Airport(s)	Total traffic units	INCOME									EXPENSES					Operating subsidies
		Charges on air traffic operations	Ground handling charges	Concessions				Rentals	Other revenues	Total income	Operation and main- tenance	Adminis- trative overheads	Other non- capital costs	Capital costs	Total expenses	
				Total	Fuel oil	Duty free	Car park									
GEORGIA Tbilisi	449	5 098		76				228	773	6 174	2 994	73	479	1 381	4 926	
GERMANY Consolidated data (17 airports)	145 989	1 063 860	1 135 214	302 667	50 420			414 719	371 223	3 287 683						180 470
GHANA Accra (1)	958	20 076	1 567	457	91		63	491	2 274	24 864	5 285	4 019	1 228	2 248	12 779	
GREECE Consolidated data		257 240		10 246	623	7 294	2 329	28 464	2 288	298 238	160 332				160 332	
HAITI Port-au-Prince (1)	1 009	3 901	138	560	412	100	48	399	310	5 308	3 043	895	10	779	4 727	
HUNGARY Budapest	4 206	67 711	1 908	3 453				11 146	31 060	115 277	104 358	5 410		5 292	115 060	
ICELAND All airports except Keflavik		9 318							239	9 557	7 125	197	198	26	7 546	1 039
Keflavik (1)	879	5 694						9 052	633	15 379	4 468	522	1 570	3 596	10 155	1 425
IRAN (ISLAMIC REPUBLIC OF) Teheran	8837	24 795						912	31 008	56 715	17 100		114	11 400	28 614	
IRELAND Consolidated data (3 airports) (1)	15687	62 746		195 844	31 371	149 314	15 160	15 675	43 042	317 307	241 276			22 236	263 512	
ITALY Bologna	3043	9 866	32 185	9 944				1 060	1 327	54 382	34 421		540	6 710	41 671	
Naples	3427	35 747	192					6 412	48	42 399	30 248	2 742	4 237	3 451	40 679	1 173
Pisa (1)	1189	4 349	13 721	1 890				224	1 869	22 052	16 294	395	2 058	2 548	21 294	
Rome (2 airports)	28454	119 967	231 245	41 508	12 118			21 476	249 235	663 431	361 034	15 260	177 151	54 832	608 276	247
Turin	2530	13 527	25 734	3 939	526			1 794	7 524	52 518	29 838	4 563	3 582	13 528	51 511	
Venice	3534	18 480	31 515	8 331	468			1 539	3 409	63 273	32 353	1 854	13 547	6 866	54 620	
JAMAICA Consolidated data (2 airports)	1565	22 699		7 566	7 566			2 188	2 494	34 947	20 436	2 155	4 936	1 868	29 396	

STATE City/Airport(s)	Total traffic units	INCOME									EXPENSES					Operating subsidiaries
		Charges on air traffic operations	Ground handling charges	Concessions				Rentals	Other revenues	Total income	Operation and main- tenance	Adminis- trative overheads	Other non- capital costs	Capital costs	Total expenses	
				Total	Fuel oil	Duty free	Car park									
JAPAN																
New Tokyo Intl	38835	753 275		69 154			133 309	123 758	1 079 496	507 648	72 180	46 304	453 364	1 079 496		
Osaka/Kansai	25889	342 845		167 265	78 888	77 104	11 273	168 355	222 387	900 852	352 434	100 931	69	629 082	1 082 515	
JORDAN																
Amman	2889	2 821						1 834		4 654	5 489	405		9 842	15 736	
KENYA																
Nairobi	3269	11 277		5 774	2 358			2 090	1 232	20 372	2 336	1 276	936	7 172	11 720	
KUWAIT																
Kuwait	4909	13 348		1 850				700	168	16 066	62 197				62 197	
LATVIA																
Liepaja		30	7	38	4				40	115	142	5	18	11	176	
Riga (1)	608	6 254	4 082	333	56			1 163	2 123	13 955	7 149	589	1 842	2 495	12 074	
LEBANON																
Beirut	2563	38 076		3 184				812	15	42 088	6 874					
LESOTHO																
Maseru	31	41						3		43	731	760			1 491	
LITHUANIA																
Kaunas	40	532	59	596	565			28	527	1 742	1 171	155	125	423	1 874	
Palanga	1	511						10	116	637	341	66	26	135	568	
Siauliai		3						92	26	121	149	3	1	1 224	1 376	
Vilnius	514	5 593						320	2 597	8 510	4 785	88	587	2 597	8 056	21
MALDIVES																
Male	1546	7 706	3 741	10 244	2 860			1 961	1 093	24 744	6 678	1 575		7 119	15 372	
MALTA																
Malta (1)	2863	25 717	1 448	4 245		4 213	31	875	1 451	33 736	28 396				28 396	
MAURITIUS																
Mauritius	1881	11 963	947	1 731	1 731			150	1 976	16 766	2 338				2 338	
MEXICO																
Acapulco	1081	7 743		238				639		8 620	5 393	628	227	368	6 617	
Cancun	6279	39 820		3 216				1 722		44 758	7 191	2 036	433	812	10 472	
Guadalajara	5476	37 253		1 928				1 906		41 087	8 165	1 191	314	866	10 537	
Mazatlan	840	5 642		97				498		6 238	2 729	282	97	282	3 390	

STATE City/Airport(s)	Total traffic units	INCOME									EXPENSES					Operating subsides
		Charges on air traffic operations	Ground handling charges	Concessions				Rentals	Other revenues	Total income	Operation and main- tenance	Adminis- trative overheads	Other non- capital costs	Capital costs	Total expenses	
				Total	Fuel oil	Duty free	Car park									
Merida	895	6 108		87				487		6 682	3 465	292	152	314	4 224	
Mexico City	20761	140 903		8 479				9 313		158 695	32 196	4 137	1 516	2 794	40 643	
Monterrey	3309	26 153		769				769		27 691	5 599	693	195	520	7 007	
Puerto Vallarta	2007	16 125		249				119		16 493	4 418	520	141	357	5 436	
San Jose del Cabo (1)	1199	10 212		249				953		11 414	1 895	390	141	206	2 632	
<b>MOLDOVA</b>																
Kishinev	286	3 484	489	24	3			432	1 081	5 509	3 370	769	857	419	5 414	
<b>MOROCCO</b>																
Agadir (1)	1026	5 248		763	110	609	43	320	113	6 444	2 776		1	5 305	8 082	
Al Hoceima (1)	51	304		3	3			9		316	504			283	787	
Casablanca (1)	3570	27 169		2 851	544	2 061	247	1 872	605	32 497	23 056		1 049	10 364	34 469	
Fes (1)	110	638		33	9	24		30	13	715	1 574		14	569	2 157	
Marrakech (1)	1055	5 757		845	97	748		176	43	6 820	1 534		14	707	2 255	
Ouarzazate (1)	72	354		25	3	22		10	23	411	446		6	565	1 017	
Oujda (1)	197	1 126		51	10	39	2	42	29	1 248	1 476		5	755	2 237	
Rabat (1)	140	1 208		128	36	85	7	116	36	1 487	1 863		14	1 114	2 991	
Tanger (1)	240	1 658		130	22	109		72	65	1 925	1 554		14	740	2 308	
<b>MYANMAR</b>																
Yangon		21 132						2 313	1 277	24 722	1 441	174	385		2 000	
<b>NEPAL</b>																
Kathmandu		10 035		47	10	19	18	408	228	10 719	249	1 456	26	91	1 822	
<b>NETHERLANDS</b>																
Amsterdam	46058	273 217		136 365	8 695			71 510	112 408	593 500	305 047			130 686	435 733	
Aruba	1605	18 279		2 198	601	1 597		1 050	1 155	22 682	12 109	147	173	1 898	14 327	
<b>NEW ZEALAND</b>																
Auckland (1)	8847	43 341		29 261			4 711	8 427	2 931	83 961	19 420	4 449	995	25 963	50 827	
Christchurch (1)	3623	14 586		3 978				5 834	2 761	27 159	4 201	5 905	105	7 638	17 849	
Dunedin (1)	477	1 067	3	281	4	31	246	360	234	1 945	934	25		507	1 467	
Queenstown		693		21			21	285	56	1 056	360	180	27	199	766	

STATE City/Airport(s)	Total traffic units	INCOME									EXPENSES					Operating subsidies
		Charges on air traffic operations	Ground handling charges	Concessions				Rentals	Other revenues	Total income	Operation and main- tenance	Adminis- trative overheads	Other non- capital costs	Capital costs	Total expenses	
				Total	Fuel oil	Duty free	Car park									
NIGERIA Consolidated data (19 airports)		218 157	15 148	8 755				9 734	7 499	259 293	73 745	18 822	21 627	32 989	147 183	
NORWAY																
Bergen	3279	42 742		11 161	599	3 737	4 605	1 084	179	55 166	10 638			9 235	19 872	
Kristiansand (1)	882	8 087		1 964	51	357	1 020	153	140	10 344	4 503			1 645	6 148	
Oslo/Gardermoen	12008	130 077		59 949	2 895	39 745	15 370	16 492	20 510	227 028	103 967			112 130	216 097	
Stavanger	2947	40 268		11 531	523	5 523	2 997	969	179	52 946	15 268			7 309	22 577	
Trondheim (1)	2634	22 959		6 633	421	1 199	2 755	944	408	30 944	10 663			6 518	17 181	
OMAN																
Muscat	3081	16 326	16 153	343	167			676	1 617	35 115	20 124				20 124	
PANAMA																
Tocumen (2)	2609	15 824		2 018				5 031	45	22 919	3 351			37	3 388	
PHILIPPINES																
Manila	15528	52 319	1 081	8 468	892			19 988	5 964	87 819	17 405	15 155		11 943	44 503	
POLAND																
Warsaw	4313	38 653		5 896	36 400	5 002	894	7 002	9 820	61 371	18 847	6 841		20 227	45 915	1 157
QATAR																
Doha	2880	11 395						1 201	8	12 604	8 280			8 489	16 769	
ROMANIA																
Bucharest/Baneasa	194	164	154					43	13	374	531	63	25	67	686	311
Bucharest/Otopeni	1674	15 491						1 756	5 962	23 209	11 539	980	115	9 130	21 765	
Timisoara	120	534	114					147	162	957	1 886	292	69	90	2 338	1 381
RUSSIAN FEDERATION																
Khabarovsk	816	2 031	5 706	1 865	1 865				466	10 069	5 157	726	472	2 996	9 351	
Moscow/Sheremetyevo	10744	60 121	21 470					18 461	13 174	113 226	50 662	4 562	11 329	9 621	76 174	
Rostov-on-Don	557	4 170	883	26			26		502	5 581	3 651	729	284	982	5 646	
St. Petersburg	2636	11 740	6 554	1 377	514	863			2 615	22 286	6 205	326	1 850	3 364	11 745	
SAO TOME AND PRINCIPE																
Sao Tome	52	731							11	743	429	9	27	257	722	



STATE City/Airport(s)	Total traffic units	INCOME									EXPENSES					Operating subsidiaries
		Charges on air traffic operations	Ground handling charges	Concessions				Rentals	Other revenues	Total income	Operation and main- tenance	Adminis- trative overheads	Other non- capital costs	Capital costs	Total expenses	
				Total	Fuel oil	Duty free	Car park									
SAUDI ARABIA Consolidated data (2 airports) (1)	21350	67 023		2 937			2 937	140 419	3 282	213 661	181 207	160		7 607	188 975	146 638
SENEGAL Dakar (1)	1286	9 565		716	473	147	95	868	836	11 984	6 420	253	1 827	4 757	13 257	
SINGAPORE Singapore/Changi	35579	186 786		197 460				39 729	174 334	598 310	155 952			135 198	291 150	
SLOVAKIA Bratislava	338	3 748	71	853	613	239		365	2 899	7 936	3 078	1 268	1 333	1 606	7 286	245
Kosice (1)	129	701	447	1 119	1 111	2	6	66	248	2 582	2 061	6	58	648	2 773	227
Piestany (1)	4	40	21					3	121	184	268	26	8	161	463	200
Poprad (1)	14	122	74	609	609			69	44	919	354	254	512	213	1 333	359
Sliac (1)	7	31	56					3	236	325	219		85	225	529	152
SLOVENIA Ljubljana	841	7 577	6 082	126	126			2 560	5 676	22 023	12 242	1 207		4 622	18 071	333
Maribor		219	120	4	4			246	242	831	829	49		89	967	
Portoroz		103	30	49	49			113	338	633	349	20	123	47	539	
SOUTH AFRICA Bloemfontein (1)	240	713		93	10		83	62	349	1 217	1 207	37	39	16	1 299	
Cape Town (1)	4 307	18 226	580	3 827	979	634	2 214	1 048	5 383	29 064	10 546	663	352	1 148	12 709	
Durban (1)	2 667	7 998	363	1 555	215	74	1 266	1 489	2 451	13 856	5 941	561	1 056	301	7 858	
East London (1)	397	1 258		30	30			695	124	2 108	1 772			44	1 816	
George (1)	124	746		86	15		71	84	414	1 330	1 035	21	6	30	1 093	
Johannesburg (1)	13 847	58 131	1 959	11 267	2 776	3 592	4 899	3 756	10 777	85 889	21 227	327	6 368	3 919	31 841	
Upington (1)	22	116	9	3	3			60	14	201	290	27	74	8	399	
SPAIN Alicante	4 888	22 606		12 410	12 410			1 308	2 636	38 960	12 813	415	3 188	6 731	23 147	
Barcelona	16 543	75 556		26 702	26 702			5 228	15 182	122 669	28 708	1 377	16 801	22 850	69 737	
Fuerteventura (1)	2 811	12 302		4 040	4 040			767	440	17 549	6 447	196	2 215	4 442	13 301	
Gran Canaria (1)	8 934	38 523		11 546				3 290	2 852	56 210	20 870	305	5 769	12 712	39 655	
Ibiza	3 831	16 052		7 099	7 099			1 451	730	25 333	7 381	224	3 612	5 238	16 456	

STATE City/Airport(s)	Total traffic units	INCOME									EXPENSES					Operating subsidies
		Charges on air traffic operations	Ground handling charges	Concessions				Rentals	Other revenues	Total income	Operation and main- tenance	Adminis- trative overheads	Other non- capital costs	Capital costs	Total expenses	
				Total	Fuel oil	Duty free	Car park									
Lanzarote	4 443	18 783		3 659	3 659			838	143	23 423	6 381	181	3 546	3 918	14 027	
Madrid	27 720	145 421		49 333				17 495	20 031	232 281	57 503	4 457	26 883	48 425	137 269	
Malaga	7 780	37 874		19 993	19 993			3 168	4 583	65 618	22 421	428	6 442	12 630	41 921	
Mallorca	17 832	77 646		27 645	27 645			4 984	5 348	115 623	43 409	1 787	14 259	27 052	86 507	
Tenerife (1)	8 261	39 780		11 224	11 224			3 072	1 924	56 001	15 353	390	4 230	9 588	29 561	
SRI LANKA Colombo	3 310	15 984	504					6 324	855	23 666	8 730	1 684	630	392	11 436	
SWAZILAND Manzini										134					497	
SWEDEN Gothenburg	4 158	35 747	302	11 350				11 576	23 379	82 354	48 153			12 972	61 125	
Malmö	1 870	12 607	6 737	2 451				3 984	5 530	31 310	21 355			5 329	26 685	
Stockholm/Arlanda	17 543	137 219		38 977				32 479	36 464	245 139	111 590			84 554	196 144	
SWITZERLAND Geneva	6 957	52 994		17 676	823	5 806	10 978	10 451	29 313	110 434	69 695	704	2 184	25 150	97 733	
Zürich	22 409	156 953		35 858	5 007			21 021	31 560	245 392	175 418			37 575	212 993	
TAJIKISTAN Consolidated data (4 airports)		16 416						3 555	10 218	30 189	8 223	1 224	7 005	10 561	27 013	
TANZANIA Dar-es-Salaam	576	3 279		435	174	87	174	1 135		4 849	2 663	653	679	1 738	5 732	1 297
THAILAND Bangkok Int'l	30 983	102 503		53 115	3 778			17 638	32 709	205 964	29 971	10 433	32 882	25 914	99 199	
Chiang Mai	2 228	2 761		690				364	293	4 108	1 267	409	125	1 078	2 880	
Phuket	3 215	8 622		1 573	37			464	807	11 466	1 725	265	264	1 259	3 512	
Songkhla/Hat Yai (2)	36	1 807		263				232	156	2 458	819	253	81	628	1 781	
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA Consolidated data (2 airports) (1)	609		8 919	909	170	568	170	341	2 216	12 385					8 919	
TONGA Tongatapu	141	1 132		33				39	12	1 216	947	29			977	

STATE City/Airport(s)	Total traffic units	INCOME									EXPENSES					Operating subsidiaries
		Charges on air traffic operations	Ground handling charges	Concessions				Rentals	Other revenues	Total income	Operation and main- tenance	Adminis- trative overheads	Other non- capital costs	Capital costs	Total expenses	
				Total	Fuel oil	Duty free	Car park									
TUNISIA Consolidated data (7 airports) (1)	8 964	88 986	1 315	16 709	798	15 812	100	3 001	9 382	119 393	44 539		27 549	72 089		
TURKEY																
Adana	996	7 023	129	522				462	9	8 144	2 338	414	1 007	3 760		
Ankara	4 270	59 808	357	2 104				3 405	31	65 705	10 124	1 634	4 022	15 780		
Antalya	6 345	55 572	7 555	855				511	1 205	65 698	5 536	2 025	2 149	9 710		
Istanbul	16 261	140 000	24 000	24 800	4 800	16 000	4 000	12 000	11 200	212 000	44 644	2 536	11 800	58 980	14 000	
Izmir	3 047	33 895	616	3 045				4 853	15	42 424	6 665	1 744	994	9 404		
Mugla (1)	2 290	31 328	329	3 270				2 751	3	37 681	2 960	875	1 451	5 285		
Trabzon		3 237	59	113				684	5	4 097	1 328	320	1 243	2 891		
TURKMENISTAN																
Ashkabad		1 906						195		2 102				1 021		
UKRAINE																
Donetsk	163	210	318					46	1 226	1 800	1 280		7 083	8 363		
Kiev/Borispol	1 480	17 830	5 988					1 772	4 815	30 405	13 067	1 526	2 297	4 866	21 756	
Kiev/Zhulyany (1)	246	1 177	122	262				238	737	2 536	1 894	10	301	179	2 384	
Simferopol	332	3 758	338					52	23	4 171	2 753	415	399	3 566		
UNITED KINGDOM																
Aberdeen (1)	2 717	29 476		7 697				7 369	1 146	45 688	20 306		6 223	2 948	29 476	
Belfast (1)	3 140	32 440		5 826				4 758	3 537	46 560	21 294	2 835	1 733	25 863		
Birmingham	6 809	81 386						58 133		139 520				85 317		
Bristol	1 894	21 210	2 953	6 988	1 646	5 342		2 947	7 545	41 642	15 748	4 464	2 911	2 533	25 655	
Cardiff	1 258	17 168	2 294	7 521	187	3 863	1 592	906	591	28 480	13 020	1 272	653	1 770	16 716	
Edinburgh (1)	4 966	48 144		16 376				4 913	819	70 251	26 528		13 428	6 223	46 179	
Glasgow	6 607	65 175		31 441				10 317	1 474	108 406	40 939		12 773	14 083	67 795	
London/Gatwick	31 969	183 734		319 487				40 611	45 360	589 192	192 249		136 408	51 255	379 913	
London/Heathrow	73 370	518 941		467 194				250 382	89 902	1 326 420	433 133		224 018	138 046	795 197	
London/London City (1)	1 365	27 865		10 553						38 419				31 561		

STATE City/Airport(s)	Total traffic units	INCOME									EXPENSES					Operating subsidiaries
		Charges on air traffic operations	Ground handling charges	Concessions				Rentals	Other revenues	Total income	Operation and main- tenance	Adminis- trative overheads	Other non- capital costs	Capital costs	Total expenses	
				Total	Fuel oil	Duty free	Car park									
London/Stansted	8 765	46 507		59 116				10 644	17 849	134 116	65 993		16 539	23 253	105 786	
Manchester	18 263	210 342	16 796	128 946		96 668	32 278	25 475	36 855	418 415	230 386			82 916	313 302	
Newcastle	2 963	40 818	4 082	13 864	478	7 176	2 646	2 391	1 323	62 478	29 350	2 892	7 369	7 785	47 396	
UNITED STATES																
Atlanta	82 199	64 696		138 698			53 527		72 175	275 569	57 681		1 789	194 897	254 367	16 507
Chicago/O'Hare	86 903	250 344		147 768				67 315	705 219	1 103 331	340 491		51 321	308 520	700 331	10 464
Dallas/Fort Worth	68 175	105 900		122 694				63 460	100 862	329 456	180 726		22 418	329 167	532 311	18 062
Los Angeles	77 904	136 442		285 972				63 799	26 443	448 857	217 445		4 000	78 277	299 722	
New York/John F. Kennedy	47 481	410 052		183 388				29 412	192 891	786 331	357 481		204 233	369 178	930 892	14 662
San Francisco	47 012	135 240		213 402				62 968	916 682	1 265 325	184 634		0	967 509	1 152 143	5 120
URUGUAY																
Montevideo	1 765	13 591		10 617	680			236	255	24 699	15 105		5 731		20 836	
UZBEKISTAN																
Tashkent	1 135	22 911						875	18 849	42 635	11 357	1 255	7 290	1 597	21 498	
VIET NAM																
Hanoi	1 895	6 693		183				118	570	574	8 020	4 151	1 000	1 945	3 000	10 096
Ho-Chi-Minh	3 824	22 365		618				329	3 740	26 723	3 966	1 500	7 515	8 000	20 981	
ZAMBIA																
Consolidated data		2 612	671	72	36	36		194	160	3 709	3 172	323		111	3 606	
ZIMBABWE																
Consolidated data (3 airports)		16 338		123		123		61	1 225	17 747	3 268	2 451	2 042		11 845	4 085

1. Traffic data from ACI's *Worldwide Airport Traffic Report — 1998*

2. Traffic data from *Aeroports* magazine, mai 1999

## NOTES

### *Algeria*

- Alger and Constantine: Expenses by area not indicated.
- Oran: Excludes expenses associated with approach and aerodrome control, meteorological services, security and firefighting and rescue services.
- Tlemcen: Includes only expenses associated with aircraft movement areas.

### *Argentina*

Excludes expenses associated with aircraft movement areas, passenger and cargo terminal facilities, and hangar and maintenance areas.

### *Australia*

General: Financial data refer to fiscal year ending 30 June 1999; car rental included in income of automobile parking.

- Brisbane: Includes only expenses associated with aircraft movement areas.
- Melbourne: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, and meteorological services
- Perth: Excludes expenses associated with hangar and maintenance areas, and meteorological services.
- Sydney: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, meteorological services and firefighting and rescue services. Other retail included in income of duty-free shops.

### *Austria*

Excludes expenses associated with approach and aerodrome control, meteorological services, and security.

### *Azerbaijan*

Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, meteorological services and security.

### *Bahrain*

Excludes expenses associated with security and firefighting and rescue services.

### *Belgium*

Expenses for operations and maintenance include administrative overheads and other non-capital costs.

- Brussels: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control and meteorological services.
- Charleroi: Excludes expenses associated with meteorological services and security.
- Liege: Excludes expenses associated with meteorological services and security.

### *Brazil*

Expenses by area not indicated.

### *Bulgaria*

Excludes expenses associated with hangar and maintenance areas, meteorological services and security.

### *Burkina Faso*

Expenses by area not indicated.

### *Cameroon*

Expenses by area not indicated. Financial data refer to fiscal year 1 July 1997 to 30 June 1998.

### *Canada*

- Calgary, Edmonton, Vancouver and Winnipeg: Excludes expenses associated with approach and aerodrome control, and meteorological services.
- Gander and Halifax: Excludes expenses associated with approach and aerodrome control. Financial data refer to fiscal year ending 31 March 1999.
- Montreal/Dorval and Montreal/Mirabel: Excludes expenses associated with meteorological services.
- Ottawa: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, and meteorological services.
- Toronto: Excludes expenses associated with approach and aerodrome control, and meteorological services.

### *Chile*

Financial data refer to 1999.

### *China*

- Hong Kong SAR: Excludes expenses associated with hangar maintenance areas. Financial data refer to fiscal year ending 31 March 1999.
- Macau SAR: Portuguese territory in 1998.

### *Cuba*

Excludes expenses associated with hangar maintenance areas. Financial data refer to 1999.

### *Czech Republic*

- Karlovy Vary and Ostrava: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, meteorological services, security, and firefighting and rescue services.
- Prague: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, meteorological services and security.

### *Denmark*

Excludes expenses associated with hangar and maintenance areas, and approach and aerodrome control.

### *Ecuador*

Excludes expenses associated with approach and aerodrome control, and firefighting and rescue services.

### *Egypt*

Consolidated data: Excludes expenses associated with hangar and maintenance areas, meteorological services and firefighting and rescue services. Financial data refer to fiscal year 1 July 1998 to 30 June 1999.

- Cairo: Expenses by area not indicated. Financial data refer to fiscal year 1 July 1997 to 30 June 1998.

### *El Salvador*

Expenses by area not indicated.

### *France*

- Lyon, Marseille, Nice and Toulouse: Excludes expenses associated with approach and aerodrome control, meteorological services and security.

- Paris: Excludes expenses associated with approach and aerodrome control, and meteorological services.

*France/Switzerland*

Bâle-Mulhouse: Excludes expenses associated with approach and aerodrome control, meteorological services and security.

*Gambia*

Excludes expenses associated with hangar and maintenance areas, meteorological services and firefighting and rescue services. Financial data refer to 2000.

*Georgia*

Expenses by area not indicated.

*Germany*

Excludes expenses associated with approach and aerodrome control, and meteorological services.

*Ghana*

Excludes expenses associated with meteorological services.

*Greece*

Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, security, and firefighting and rescue services.

*Haiti*

Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control and meteorological services. Financial data refer to 1999.

*Hungary*

Excludes expenses associated with hangar and maintenance areas, and approach and aerodrome control.

*Iceland*

Excludes expenses associated with meteorological services.

*Iran (Islamic Republic of)*

Excludes expenses associated with hangar and maintenance areas, and meteorological services.

*Ireland*

Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, and meteorological services.

*Italy*

- Bologna: Excludes expenses associated with aircraft movement areas, approach and aerodrome control, meteorological services, security, and firefighting and rescue services.
- Naples: Includes only expenses associated with passenger and cargo terminal facilities.
- Pisa: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, meteorological services, security, and firefighting and rescue services.
- Rome: Excludes expenses associated with approach and aerodrome control, and meteorological services.
- Turin: Excludes expenses associated with approach and aerodrome control, meteorological services, security and firefighting and rescue services.
- Venice: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, meteorological services, security, and firefighting and rescue services.

*Jamaica*

Excludes expenses associated with approach and aerodrome control and meteorological services. Financial data refer to fiscal year ending 31 March 1999.

*Japan*

- Osaka/Kansai: Excludes expenses associated with meteorological services, security, and firefighting and rescue services.
- New Tokyo International: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control and meteorological services. Financial data refer to fiscal year ending 31 March 1999.

*Jordan*

Excludes expenses associated with meteorological services and security.

*Kenya*

Expenses by area not indicated. Financial data refer to fiscal year 1 July 1997 to 30 June 1998.

*Kuwait*

Expenses by area not indicated. Financial data refer to fiscal year 1 July 1997 to 30 June 1998.

*Latvia*

- Liepaja: Excludes expenses associated with approach and aerodrome control, meteorological services and firefighting and rescue services.
- Riga: Excludes expenses associated with hangar maintenance areas, approach and aerodrome control, and meteorological services.

*Lebanon*

Excludes expenses associated with security.

*Lesotho*

Expenses by area not indicated. Financial data refer to fiscal year ending 31 March 1999.

*Lithuania*

- Vilnius: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control and meteorological services.
- Palanga: Excludes expenses associated with approach and aerodrome control, meteorological services and security.
- Siauliai: Excludes expenses associated with passenger and cargo terminal facilities and hangar maintenance areas.
- Kaunas: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, and meteorological services.

*Maldives*

Expenses by area not indicated.

*Malta*

Excludes expenses associated with hangar and maintenance areas. Financial data refer to fiscal year ending 31 March 1999.

*Mauritius*

Expenses by area not indicated. Financial data refer to fiscal year 1 July 1997 to 30 June 1998.

*Mexico*

Excludes expenses associated with approach and aerodrome control, and meteorological services.

*Moldova*

Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control and meteorological services.

*Myanmar*

Expenses by area not indicated.

*Nepal*

Excludes expenses associated with meteorological services, and security. Financial data refer to 1999.

*Netherlands*

- Amsterdam: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, meteorological services and security.
- Aruba: Excludes expenses associated with hangar and maintenance areas, meteorological services, and firefighting and rescue services.

*New Zealand*

- Auckland: Excludes expenses associated with approach and aerodrome control, and meteorological services. Financial data refer to fiscal year ending 30 June 1999.
- Christchurch: Excludes expenses associated with approach and aerodrome control, meteorological services and security.
- Dunedin: Excludes expenses associated with approach and aerodrome control, and meteorological services. Financial data refer to fiscal year ending 30 June 1999.
- Queenstown: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, and meteorological services. Financial data refer to fiscal year ending 30 June 1999.

*Nigeria*

Expenses by area not indicated.

*Norway*

Excludes expenses associated with hangar and maintenance areas. Financial data refer to 1999.

*Oman*

Excludes expenses associated with security and firefighting and rescue services.

*Panama*

Includes only expenses associated with aircraft movement areas.

*Philippines*

Expenses by area not indicated.

*Poland*

Excludes expenses associated with approach and aerodrome control.

*Qatar*

Expenses by area not indicated.

*Romania*

- Bucharest/Otopeni: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, and meteorological services.
- Bucharest/Baneasa and Timisoara: Expenses by area not indicated..

*Russian Federation*

- Khabarovsk: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, meteorological services and firefighting and rescue services.
- Moscow/Sheremetyevo and St. Petersburg: Excludes expenses associated with hangar and maintenance areas.
- Rostov-on-Don: Excludes expenses associated with aircraft movement areas, and approach and aerodrome control.

*Sao Tome and Principe*

Excludes expenses associated with hangar and maintenance areas.

*Saudi Arabia*

Excludes expenses associated with hangar and maintenance areas, and meteorological services.

*Senegal*

Excludes expenses associated with approach and aerodrome control, meteorological services, and firefighting and rescue services.

*Singapore*

Excludes expenses associated with hangar and maintenance areas. Financial data refer to fiscal year ending 31 March 1999.

*Slovakia*

- Bratislava: Excludes expenses associated with approach and aerodrome control, and meteorological services.
- Kosice, Piestany, Poprad and Sliac: Expenses by area not indicated..

*Slovenia*

- Ljubljana: Excludes expenses associated with approach and aerodrome control, and meteorological services.
- Maribor: Excludes expenses associated with hangar maintenance areas.

*South Africa*

- Bloemfontein: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control and meteorological services. Financial data refer to fiscal year 1 July 1998 to 30 June 1999.
- Cape Town: Expenses by area not indicated. Financial data refer to fiscal year 1 July 1998 to 30 June 1999.
- Durban: Excludes expenses associated with meteorological services. Financial data refer to fiscal year 1 July 1998 to 30 June 1999.
- East London and George: Excludes expenses associated with hangar and maintenance areas, and meteorological services.
- Johannesburg: Excludes expenses associated with approach and aerodrome control, and meteorological services. Financial data refer to 1999.
- Kimberley: Financial data refer to fiscal year 1 July 1998 to 30 June 1999.
- Upington: Excludes expenses associated with approach and aerodrome control, and meteorological services. Financial data refer to 1999.

*Spain*

Excludes expenses associated with approach and aerodrome control and meteorological services.

*Sri Lanka*

Excludes expenses associated with hangar maintenance areas.

*Swaziland*

Excludes expenses associated with meteorological services. Financial data refer to fiscal year 1 July 1998 to 30 June 1999.

*Switzerland*

- Geneva: Excludes expenses associated with meteorological services and security.
- Zurich: Excludes expenses associated with approach and aerodrome control, meteorological services and security.

*Thailand*

Excludes expenses associated with meteorological services. Financial data refer to fiscal year 1 October 1997 to 30 September 1998.

*The former Yugoslav Republic of Macedonia*

Excludes expenses associated with aircraft movement areas, hangar and maintenance areas, approach and aerodrome control and meteorological services.

*Tonga*

Financial data refer to fiscal year 1 July 1997 to 30 June 1998.

*Tunisia*

Excludes expenses associated with hangar and maintenance areas, and meteorological services.

*Turkey*

Expenses by area not indicated.

*Turkmenistan*

Includes only expenses associated with passenger and cargo terminal facilities.

*Ukraine*

- Kiev/Borispol: Excludes expenses associated with hangar and maintenance areas, and meteorological services.
- Kiev/Zhulyany: Excludes expenses associated with hangar and maintenance areas, meteorological services, security, and firefighting and rescue services.

*United Kingdom*

- Aberdeen, Edinburgh, Glasgow, London/Gatwick, London/Heathrow and London/Stansted: Excludes expenses associated with hangar and maintenance areas, approach and aerodrome control, and meteorological services.
- Birmingham: Excludes expenses associated with meteorological services. Rentals include income from concessions and other revenues.
- Bristol and Manchester: Excludes expenses associated with hangar and maintenance areas.
- Bristol: Other revenues include in house run car park income.

- London/London City: Excludes expenses associated with security. Concessions include ground handling and other revenues.

*United Republic of Tanzania*

Excludes expenses associated with hangar and maintenance areas, and meteorological services. Financial data refer to fiscal year 1 July 1998 to 30 June 1999.

*United States*

Excludes expenses associated with approach and aerodrome control and meteorological services. Income from charges on air traffic operations include terminal/international arrival area rental or other charge, cargo and hangar rentals and fuel flowage fees.

- Atlanta and Chicago: Financial data refer to 1997.
- Dallas: Financial data refer to fiscal year 1 October 1997 to 30 September 1998.
- Los Angeles and San Francisco: Financial data refer to fiscal year 1 July 1997 to 30 June 1998.

*Uzbekistan*

Excludes expenses associated with aircraft movement areas, hangar and maintenance areas, approach and aerodrome control, and security.

*Viet Nam*

Expenses by area not indicated.

*Zambia*

Excludes expenses associated with hangar and maintenance areas, and approach and aerodrome control.

*Zimbabwe*

Excludes expenses associated with hangar and maintenance areas, and meteorological services.



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**Appendix 2 to Chapter 2. Air navigation services financial and traffic data (1998)**  
(in thousands of dollars)

STATE	Total number of flights	INCOME					EXPENSES					
		Route facility charges	Approach aerodrome control charges	Grants and subsidies	Other revenues	Total income	Operation and maintenance	Administrative overheads	Depreciation and/or amortization	Interest	Other expenses	Total expenses
ALGERIA	98 310	41 412	3 439		5	44 855						
ARGENTINA	237 476	41 295				41 295	54 173	21 727	5 726	8 970		90 596
AUSTRALIA	1 864 289	209 285	115 452	7 036	49 123	380 897	248 942	21 683	43 814	5 885	31 278	351 602
AUSTRIA	759 810	132 380				132 380						144 772
AZERBAIJAN		6 690	2 474			9 164	2 428		1 246		1 970	5 644
BAHRAIN	56 169					16 150	444	3 914	564		5 149	10 071
BANGLADESH	85 141	8 458	22 481		400	31 340	2 278	3 949	8 653			14 879
BRAZIL	3 548 918	298 265	72 791	70 721		441 777	202 466	43 957	133 107	58 756	3 490	441 777
BULGARIA	292 213	75 513	13 030		7 134	95 677	64 414	8 348	8 200	5 735	1 845	88 542
CANADA	3 709 606	231 470		378 552	6 126	616 147	493 394		41 177	70 966	6 481	612 018
CHILE	606 342	6 806				6 806	2 170					2 170
CHINA/Hong Kong SAR	235 678	16 160				16 160	14 343	242	2 935		14	17 534
COCESNA (1)	74 327	15 183			697	15 880	6 595	1 177	1 041	73	176	9 063
CUBA	218 087	6 932	3 237		218	10 388	3 141	1 814	1 647		1 511	8 113
CZECH REPUBLIC	249 695	31 012				31 012	8 542	2 683	7 454	4 108	4 932	27 719
ECUADOR	105 970	23 117	5 751		36	28 904	6 284	9 223				15 507
ESTONIA	71 750	8 072			190	8 261	3 392		1 171	508	45	5 115
FINLAND	239 149	17 616		844	99	18 558	12 490	4 283	4 026	1 292		22 091
FRANCE	2 206 735	835 310	166 114			1 001 424	618 058	126 829	166 452	35 729	30 480	977 548
GEORGIA	43 212	5 615	3 151			8 766	4 182	413	713	211		5 519
GERMANY	2 340 200	615 837				615 837	114 753	369 165	88 119	28 168		600 205
GHANA	45 544	9 001	5 132			14 133	4 522		7 346	235	1 028	13 131
GREECE	410 854	75 318	0			75 318	47 997		6 279	6 357		60 633
HAITI	60 444	2 461	757		1 750	4 968						
HUNGARY	423 195	38 960				38 960	23 460	3 676	1 735	3 549	2 872	35 292

STATE	Total number of flights	INCOME					EXPENSES					
		Route facility charges	Approach aerodrome control charges	Grants and subsidies	Other revenues	Total income	Operation and maintenance	Administrative overheads	Depreciation and/or amortization	Interest	Other expenses	Total expenses
ICELAND	113 745	15 841		3 134		18 975	18 273	1 511	950	665		21 399
IRAN (ISLAMIC REP. OF)	95 623	286 710			4	286 714						
IRELAND	396 229	69 219				69 219	48 902	8 075	5 693	1 841		64 511
ITALY		403 967	69 036	43 213		516 216						412 291
JAMAICA	149 897	5 505		1 519		7 024	366	6 258	1 302			7 926
JORDAN	85 000	15 515				15 515	7 052	1 410	2 116		2 116	12 694
KENYA	197 054	12 064				12 064	369	201			9	578
LATVIA	98 640	12 553	1 077			13 630	3 317	2 075	3 303	802	1 863	11 360
LITHUANIA	69 367	8 719	808			9 527	3 695	1 776	2 698	627	564	9 361
MALDIVES	13 163	69				69	776	170	340	340		1 626
MAURITIUS	16 462	1 513				1 513						
MEXICO	1 503 760	128 904				128 904	69 401	7 299	4 278	47 927		128 904
MOROCCO	238 565	41 390				41 390	1 720	3 763	3 717			9 201
NETHERLANDS	853 918	87 637	51 555	1 955	985	142 132	42 336	6 135	11 667	4 731	35078	99 947
NEW ZEALAND	571 454	18 321	25 911		3 612	47 843	37 521		5 208	497	4 826	48 052
NIGERIA		17 187	5 812		269	23 268						
NORWAY	462 000	57 680				57 680	43 789		9 261	6 879		59 929
OMAN	35 548	32 197				32 197						20 124
PAKISTAN						99 794	45 186		12 488		24 460	82 134
PANAMA	49 117	7 374				7 374	2 320					2 320
POLAND	457 000	67 782	1 329		1 262	70 373	25 767	3 901	13 046	5 884	1 131	49 729
PORTUGAL	358 616	95 653	14 393	168	2 279	112 494	72 813	19 059	5 635	5 329		102 835
REPUBLIC OF KOREA	288 245						5 334	134				5 468
ROMANIA	285 000	74 531	8 057			82 589	72 181		11 415	11 303		94 899
SINGAPORE	331 556						21 347		11 859			33 206
SLOVAKIA	180 293	20 936	1 112		1 674	23 721	11 246	4 382	4 274	45		19 947
SLOVENIA	156 598	9 820				9 820	6 546		2 879	1 703	1 055	12 184
SOUTH AFRICA	391 993	19 924	11 985			31 909	22 994	1 108	4 927	201	218	29 448
SPAIN	1 410 941	345 472				345 472						348 086
SRI LANKA	36 740	1 472				1 472	593	82	33			709

STATE	Total number of flights	INCOME					EXPENSES					
		Route facility charges	Approach aerodrome control charges	Grants and subsidies	Other revenues	Total income	Operation and maintenance	Administrative overheads	Depreciation and/or amortization	Interest	Other expenses	Total expenses
SURINAME	22 940	646				646	991					991
SWEDEN	643 991	117 272				117 272	83 221	10 935	5 681	4 148	7 366	111 351
SWITZERLAND	977 900	120 281	54 830		2 731	177 842	96 640	50 110	23 057	7 281		177 088
TAJIKISTAN	29 703	1 056				1 056						955
TANZANIA	33 974	2 883	1 052			3 935	1 886				1 088	2 975
THAILAND	239 888	48 787				48 787	29 026	13 847	1 758	4 157		48 787
TUNISIA (2)	94 166											
TURKEY		158 000	1 420			159 420	33 328	2 488	11 588	7 932	2 600	57 936
TURKMENISTAN						8 612						
UKRAINE	158 466	48 580	4 772			53 352	31 067	5 976	6 732	2 300	7 277	53 352
UNITED KINGDOM	1 864 096	741 969				741 969						755 943
UNITED STATES	49 928 302											5 567 000
URUGUAY	54 695	6 348	7 733			14 081	15 447					15 447
UZBEKISTAN	19 459	12 196	5 702			17 898	9 260	2 655	2 820	1 622	1 269	17 625
VIET NAM	143 752	38 000	10 000			48 000	37 000		9 000	200	1 500	47 700
ZAMBIA		1 818				1 818						
ZIMBABWE	145 712	6 535			82	6 617	2 042	711			2 001	4 754

1. Includes Belize, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua.  
2. Income and expenses included in airport financial data.

## NOTES

### *Australia*

Other revenues include income from rescue and fire-fighting charges (A\$55.6 million). Financial and traffic data refer to fiscal year ending 30 June 1999.

### *China/Hong Kong (SAR)*

Financial data refer to fiscal year ending 31 March 1999.

### *Cuba*

Financial and traffic data refer to 1999.

### *Haiti*

Financial data refer to fiscal year ending 30 June 1999.

### *Jamaica*

Financial data refer to fiscal year ending 31 March 1999.

### *Kenya*

Financial data refer to fiscal year ending 30 June 1999.

### *Netherlands*

Other expenses include costs for Eurocontrol HQ, Maastricht centre and MET.

### *New Zealand*

Airways Group has other income of NZ\$7.8m (e.g. consulting contracts, etc), not included. Administrative overheads are included in operation and maintenance. Other expenses include Tax NZ\$3.56 million. Financial data refer to fiscal year ending 30 June 1999. Traffic data refer to 1999.

### *Nigeria*

Financial data refer to 2000.

### *Pakistan*

Administrative overheads are included in operation and maintenance and in accordance with Income/Expenditure Account attached to questionnaire reply. Financial charges are included in other expenses and in accordance with Income/Expenditure Account attached to questionnaire reply. Financial data refer to fiscal year ending 30 June 1999.

### *Republic of Korea*

Traffic data refer to 1996.

### *Singapore*

Financial and traffic data refer to fiscal year ending 31 March 1999.

### *South Africa*

Financial and traffic data refer to 1999.

### *Sweden*

Other expenses include costs for Eurocontrol membership.

### *Thailand*

Income from approach and aerodrome control charges are included in route facility charges.

### *United Republic of Tanzania*

Financial data refer to fiscal year ending 30 June 1999.

### *United States*

FAA, that operates air navigation services, is financed from the U.S. General Fund and the Airport and Airway Trust Fund. The Trust Fund is the repository for taxes paid by the users of U.S. aviation system. Total Tax Revenues = US\$ 10 318.5 billions (estimate for FY 1999). Financial data refer to 1999.

### *Zimbabwe*

48% of expenses relate to flight safety standards.

# Chapter 3

## FUNDING OF INFRASTRUCTURE

### BACKGROUND

3.1 This chapter lists various sources of financing for airports and air navigation services and reviews major new trends in infrastructure funding. The financing requirements of airports and air navigation services providers are expected to accelerate and reach higher levels in the next decade than ever before. On the basis of information collected from States and other sources, it is estimated that airport and air navigation services investment requirements between now and the year 2010 will exceed \$300 billion, indicative of the challenges in the area of financing which airport and air navigation services managing bodies will be facing in the years to come.

### SOURCES OF FINANCING

3.2 A variety of sources are used to finance airport and air navigation services investment needs, as summarized globally in Tables 3-1 and 3-2 and regionally in Tables 3-3 and 3-4 (the responses by States, including some breakdown for individual airports are provided in Appendices 1 and 2 to this chapter). These data show the primary sources of funding for airports in 92 States and for air navigation services in 87 States (States were asked about their applied and planned practices in this regard in the pre-conference questionnaire). Both tables show that self-financing (e.g. from retained earnings) has replaced government financing as the most frequently quoted source when compared to the survey conducted prior to the 1991 CARFM, and this is expected to remain so in the future. This does not mean, however, that self-financing is or will be the largest source of financing. The reliance on government financing still remains significant in many States, but could decrease considerably in the years to come with the continuous increase in the number of autonomous bodies operating airports and/or air navigation services. Compared to the situation prior to the 1991 CARFM, commercial loans have shown a remarkable increase, again reflecting the growth in autonomous bodies that are expected to secure their own financing. An interesting new trend is the growing importance of bonds and share capital, which again is clearly linked to the new organizational structures. Another development has been the growth in the number of sources of financing used for individual airports or air navigation services.

**Table 3-1. Primary sources for financing major airports in 92 States**

	NUMBER OF AIRPORTS									
	Self-financing	National government	Regional/municipal government	Foreign government loans or aid	Development banks or funds	Commercial loans		Bonds	Share capital	Other
						Domestic	Foreign			
Applied	278	147	30	42	94	115	79	34	26	19
Planned	156	56	12	30	71	80	82	22	47	20

**Table 3-2. Primary sources for financing air navigation services (ANS) in 87 States**

	NUMBER OF AIR NAVIGATION SERVICES							
	Self-financing	National government	Foreign governments loans or aid	Development banks or funds	Commercial loans		Share capital	Other
					Domestic	Foreign		
Applied	67	43	30	24	17	25	5	4
Planned	33	8	10	12	16	17	8	2

**Table 3-3. Primary sources for financing airports (number of airports by region)**

Region (number of States)	Self-financing	National government	Regional/municipal government	Foreign government loans or aid	Development banks or funds	Commercial loans		Bonds	Share capital	Other
						Domestic	Foreign			
Asia and Pacific (14 States)										
Applied	20	10	5	10	3	11	4	4	7	0
Planned	16	4	2	8	6	7	3	1	7	0
Middle East (8 States)										
Applied	2	8	0	0	1	0	1	0	0	0
Planned	2	2	0	0	0	2	1	1	2	3
Africa (23 States)										
Applied	78	64	0	26	33	4	23	0	2	2
Planned	33	21	0	14	20	13	26	8	10	1
Europe (31 States)										
Applied	129	33	17	2	52	75	47	6	14	2
Planned	87	17	7	6	43	51	46	5	13	0
North America (2 States)										
Applied	24	6	3	0	0	24	0	24	3	6
Planned	6	6	3	0	0	6	0	6	3	6
Caribbean/Central/South America (14 States)										
Applied	25	26	5	4	5	1	4	0	0	9
Planned	12	6	0	2	2	0	6	1	12	10
TOTAL (92 States)										
Applied	278	147	30	42	94	115	79	34	26	19
Planned	156	56	12	30	71	80	82	22	47	20

**Table 3-4. Primary sources for financing**  
(number of air navigation services providers by region)

	Self-financing	National government	Foreign government loans or aid	Development banks or funds	Commercial loans		Share capital	Other
					Domestic	Foreign		
Asia and Pacific (13 States)								
Applied	11	7	6	3	3	5	3	0
Planned	8	3	4	2	3	3	1	0
Middle East (7 States)								
Applied	3	6	0	1	1	0	0	0
Planned	2	2	0	0	1	0	1	0
Africa (22 States)								
Applied	13	13	11	9	2	4	1	1
Planned	5	1	4	4	1	5	2	0
Europe (30 States)								
Applied	27	7	1	8	9	12	1	1
Planned	14	1	0	4	9	7	3	0
North America (2 States)								
Applied	2	1	0	0	1	0	0	2
Planned	0	0	0	0	0	0	0	2
Caribbean/Central/South America (13 States)								
Applied	11	9	2	3	1	4	0	0
Planned	4	1	2	2	2	2	1	0
TOTAL (87 States)								
Applied	67	43	20	24	17	25	5	4
Planned	33	8	10	12	16	17	8	2

3.3 As indicated in Tables 3-3 and 3-4, certain differences between regions also emerge. For example, the growth in self-financing has been particularly manifest in Europe and North America, while financing by bonds, which in 1991 was almost exclusively only applied in the United States, is finding wider and growing application elsewhere, Europe in particular. As to planned financing, although States have not always indicated the sources of funding they plan to use in the future, it appears that the use of loans is expected to increasingly replace government funding.

### DEVELOPMENTS IN INFRASTRUCTURE FUNDING

3.4 Recent developments have shown (and this trend is foreseen to become even more pronounced in the future), that the private sector is replacing the public sector in its traditional roles, not only as owner and manager of facilities but also as financier of airport and air navigation services infrastructure. Indeed, governments have increasingly transferred the burden of financing airports and air navigation services



to the private sector or to financially autonomous public or semi-public bodies. From a government perspective, autonomous and profitable separately managed entities also have the advantage of increasing the flow of tax revenues that can finance other government activities. Moreover, transfer of ownership to private interests where it has taken place (almost exclusively limited to airports) has not only transferred the responsibility for financing from the government but also made it possible for the government to realize the cash value of its airport holdings.

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**Appendix 1 to Chapter 3. Primary sources for funding airports**  
(breakdown of Table 3-1 by responding States, in alphabetical order)

STATE City/airport(s)	Self-financing		National government		Regional/ municipal government		Foreign government loans or aid		Development banks or funds		Commercial loans (domestic)		Commercial loans (foreign)		Bonds		Share capital		Other	
	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned
ALGERIA 14 airports (1)	x	x	x	x																
ARGENTINA 2 airports (2)	x		x										x	x						
AUSTRALIA Brisbane												x	x		x			x		
Melbourne	x	x										x	x					x	x	
Perth												x			x			x		
Sydney	x	x										x	x							
AUSTRIA Vienna	x																	x		
BAHRAIN Bahrain				x																x
BANGLADESH Dhaka	x		x					x												
BARBADOS Bridgetown				x						x										
BELGIUM Antwerp							x													
Brussels/National	x									x										
Charleroi/Bruxelles Sud	x			x						x										
Liege	x						x			x										
Ostend							x													
BOLIVIA 3 airports (3)	x																			
BOTSWANA 6 airports (4)		x		x						x										

STATE City/airport(s)	Self-financing		National government		Regional/ municipal government		Foreign government loans or aid		Development banks or funds		Commercial loans (domestic)		Commercial loans (foreign)		Bonds		Share capital		Other	
	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned
BRAZIL 6 airports (5)	x		x		x															
BRUNEI DARUSSALAM Brunei		x	x																	
BULGARIA Sofia	x							x		x		x	x		x			x		
BURKINA FASO Ouagadougou Bobo-Dioulasso					x					x										x
CAMEROON 3 airports (6)	x	x						x	x		x									
CANADA Major airports	x											x				x				
CHILE Airport network (7)	x		x																x	x
CHINA (Honk Kong SAR) Hong Kong/Chek Lap Kok		x			x							x	x			x				
COSTA RICA San Jose/Juan Santamaria 2 airports (8)	x					x														x
CUBA Havana	x	x	x	x				x	x					x	x					
CZECH REPUBLIC Prague/Ruzyne	x	x	x	x						x		x	x			x				
DENMARK Copenhagen	x	x								x	x	x	x	x	x			x		
ECUADOR 2 airports (9)	x			x										x					x	
EGYPT 5 airports (10)			x	x										x	x					

STATE City/airport(s)	Self-financing		National government		Regional/ municipal government		Foreign government loans or aid		Development banks or funds		Commercial loans (domestic)		Commercial loans (foreign)		Bonds		Share capital		Other	
	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned
ERITREA Asmara	x	x	x	x				x		x		x								
ESTONIA Tallinn	x	x								x		x		x						
FINLAND Helsinki/Vantaa	x											x		x						
FRANCE Bâle-Mulhouse	x											x		x						
3 airports (11)	x					x						x								
Aéroports de Paris	x											x		x						
Toulouse	x											x								
GAMBIA Banjul	x							x		x				x						x
GERMANY Berlin	x	x		x							x									
Bremen	x	x				x														
Dresden	x					x														
Düsseldorf	x					x						x							x	
Erfurt	x	x										x	x							
Frankfurt	x											x								x
Hamburg	x											x								
Hanover	x									x		x								x
Köln/Bonn	x											x		x						
Leipzig	x	x				x				x	x	x	x						x	x
Munich	x	x										x	x	x	x					
Münster/Osnabrück							x					x	x							x
Nürnberg	x	x										x	x							
Saarbrücken				x	x															
Stuttgart	x						x					x								

STATE City/airport(s)	Self-financing		National government		Regional/ municipal government		Foreign government loans or aid		Development banks or funds		Commercial loans (domestic)		Commercial loans (foreign)		Bonds		Share capital		Other		
	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	
GHANA Accra	x		x					x				x		x							
GREECE Athens/Hellinikon 7 airports (13)			x																		
HAITI Port au Prince		x	x						x					x							
ICELAND Keflavik	x	x										x	x	x	x						
IRAN (ISLAMIC REP. OF) Tehran/Mehrabad			x											x			x				
IRELAND 3 airports (14)	x								x			x				x					
ITALY Rome-Fiumicino 2 airports (15)	x		x			x															
JAMAICA Kingston/N. Manley Montego Bay	x	x	x					x		x				x		x			x		
JAPAN Osaka/Kansai Tokyo/Narita			x			x				x						x					
JORDAN Amman/Queen Alia		x	x																		
KENYA Nairobi/JKIA	x		x					x						x							
KUWAIT Kuwait			x																		
LEBANON Beirut	x		x						x												

STATE City/airport(s)	Self-financing		National government		Regional/ municipal government		Foreign government loans or aid		Development banks or funds		Commercial loans (domestic)		Commercial loans (foreign)		Bonds		Share capital		Other	
	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned
LESOTHO Maseru			x	x																
LITHUANIA 4 airports (16)	x	x	x	x					x	x			x	x						
MALDIVES Malé	x		x		x			x		x										
MALTA Luqa	x											x							x	
MAURITIUS Mauritius	x		x									x		x						
MEXICO Acapulco		x	x																	x
Cancun		x																		x
Guadalajara		x																		x
Mazatlan		x	x																	x
Merida		x																		x
Ciudad de Mexico		x	x																	x
Monterrey		x	x																	x
Puerto Vallarta		x																		
San Jose del Cabo		x																		x
MONACO Monaco			x	x																
MOROCCO 8 airports (17)	x		x							x										
NAMIBIA 8 airports (18)	x		x									x		x						
NEPAL Kathmandu	x		x					x		x		x							x	
NETHERLANDS 3 airports (19)	x	x										x	x						x	x

STATE City/airport(s)	Self-financing		National government		Regional/ municipal government		Foreign government loans or aid		Development banks or funds		Commercial loans (domestic)		Commercial loans (foreign)		Bonds		Share capital		Other		
	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	
NEW ZEALAND																					
Auckland	x	x										x	x								
Christchurch	x	x										x	x								
Dunedin												x						x			
Queenstown	x											x									
Wellington	x	x					x	x				x	x					x	x		
NIGERIA																					
Major airports (20)	x																				
NORWAY																					
All State owned airports	x	x																			
OMAN																					
Muscat/Seeb				x																x	
PANAMA																					
Panama City	x			x						x			x								
POLAND																					
Warsaw/Okecie	x	x												x	x	x					
QATAR																					
Doha	x	x																		x	
REPUBLIC OF MOLDOVA																					
Chisinau	x			x																	
ROMANIA																					
Bucharest/Otopeni	x	x		x	x										x	x				x	x
RUSSIAN FEDERATION																					
Khabarovsk	x																				
Moscow-Sheremetyevo	x	x																			
Rostov-na-donu	x	x																			
Sankt-Peterburg/Pulkovo	x	x																			
SAINT VINCENT AND THE GRENADINES																					
St Vincent/ET Joshua				x	x																

STATE City/airport(s)	Self-financing		National government		Regional/ municipal government		Foreign government loans or aid		Development banks or funds		Commercial loans (domestic)		Commercial loans (foreign)		Bonds		Share capital		Other	
	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned
SAO TOME AND PRINCIPE Sao Tome							x		x											
SAUDI ARABIA 2 airports (21)			x	x								x								x
SENEGAL Dakar/L. S. Senghor	x	x	x				x	x	x	x										
SINGAPORE Singapore/Changi	x	x																		
SLOVAKIA 5 airports (22)	x	x	x	x		x			x											
SLOVENIA Ljubljana	x	x																	x	
Maribor		x	x			x													x	
Portoroz	x	x				x													x	
SOUTH AFRICA Bloemfontein	x											x						x		
Cape Town	x												x							
Durban	x													x					x	
East London	x																		x	
George	x													x						
Johannesburg	x													x						
Kimberley	x											x							x	
Port Elizabeth		x																		
SPAIN Airport network	x	x								x	x	x	x	x	x					
SRI LANKA Colombo	x	x	x	x			x	x												
SWAZILAND Mbabane			x				x													



STATE City/airport(s)	Self-financing		National government		Regional/ municipal government		Foreign government loans or aid		Development banks or funds		Commercial loans (domestic)		Commercial loans (foreign)		Bonds		Share capital		Other	
	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned
SWEDEN 3 airports (23)	x	x										x	x							
SWITZERLAND Bale-Mulhouse	x		x		x				x			x								
Geneva	x		x							x										
Zurich	x	x			x															
TAJIKISTAN 4 airports (24)	x	x						x	x		x								x	
TANZANIA 3 airports (25)	x		x					x		x										
THAILAND Bangkok/Don Muang	x	x						x												
Second Bangkok Int'l		x						x	x					x	x				x	x
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA 2 airports (12)	x	x	x	x							x	x		x	x					
TUNISIA 7 airports (26)	x	x						x	x	x	x			x	x					
TURKEY Istanbul/Atatürk	x		x																	
TURKMENISTAN Ashgabat	x	x	x	x	x	x								x	x					
UGANDA Entebbe	x								x											
UKRAINE Dniepropetrovsk	x	x				x					x									x
Donetsk	x	x																		x
Kyiv/Borispol	x	x	x								x	x	x	x	x					
Lvov	x	x								x	x	x	x		x					

STATE City/airport(s)	Self-financing		National government		Regional/ municipal government		Foreign government loans or aid		Development banks or funds		Commercial loans (domestic)		Commercial loans (foreign)		Bonds		Share capital		Other	
	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned
Odessa	x							x						x						
Simferopol	x	x		x																
UNITED KINGDOM																				
6 airports (27)	x								x		x				x		x			
Belfast Int'l	x	x							x	x	x	x								
Birmingham Int'l	x	x									x	x								
Bristol International	x																			x
Cardiff Int'l	x	x																		
East Midlands	x	x									x	x								
London City	x	x																		
Manchester	x	x							x					x		x				x
Newcastle	x																			
UNITED STATES																				
Atlanta	x	x	x	x							x	x			x	x	x	x	x	x
Chicago-O'Hare	x	x	x	x							x	x			x	x	x	x	x	x
Dallas/Fort Worth	x	x	x	x	x	x					x	x			x	x			x	x
Los Angeles	x	x	x	x	x	x					x	x			x	x			x	x
New York-JFK	x	x	x	x							x	x			x	x	x	x	x	x
San Francisco	x	x	x	x	x	x					x	x			x	x			x	x
URUGUAY																				
Montevideo	x		x																	x
VIET NAM																				
2 airports (28)	x		x	x				x		x										
ZAMBIA																				
Major airports (29)	x		x						x					x						
ZIMBABWE																				
8 airports (30)	x		x					x		x				x		x			x	

## NOTES

1. Algiers, Adrar, Annaba, Bejaia, Constantine, Djanet, Ghardaia, Hassi Messaoud, In Amenas, Oran, Tamanrasset, Tebessa, Tiaret, Tlemcen
2. Buenos Aires/Ezeiza and Aeroparque
3. Cochabamba, La Paz, Santa Cruz
4. Francistown, Gaborone, Gizanz, Kasane, Maun, Selebi Phikwe
5. Manaus, Porto Alegre, Recife, Rio de Janeiro-Galeao, Salvador, Sao Paulo-Guarulhos
6. Douala, Garoua, Yaoundé
7. Antofagasta, Arica, Concepcion, Puerto Montt, Punta Arenas, Santiago
8. Guanacaste-D. Oduber, Alajuela-Tobias Bolaños
9. Guayaquil, Quito
10. Alexandria, Aswan, Hurghada, Luxor, Sharm el Sheikh
11. Lyon, Marseille, Nice
12. Ohrid, Skopje
13. Chania, Corfu, Heraklion, Kos, Rhodes, Thessaloniki, Zakynthos
14. Cork, Dublin, Shannon
15. Bologne, Naples
16. Kaunas, Palanga, Siauliai, Vilnius
17. Agadir, Al Hoceima, Casablanca-Mohamed V, Fez, Marrakesh, Ouarzazate, Oujda, Rabat
18. Katima Mulilo, Keetmanshop, Luderitz, Ondangwa, Rurdu, Walvis Bay, Windhoek (2 airports).
19. Amsterdam, Eindhoven, Rotterdam
20. Abuja, Calabar, Ilorin, Kaduna, Kano, Lagos, Maiduguri, Port Harcourt, Sokoto
21. Jeddah, Riyadh
22. Bratislava, Kosice, Poprad, Sliat, Piestany
23. Gothenburg, Malmo, Stockholm-Arlanda
24. Dushanbe, Khudzhand, Kurgan Tyube, Kulyab
25. Dan Es Salaam, Kilimanjaro, Zanzibar
26. Djerba, Gafsa, Monastir, Sfax, Tabarka, Tozeur, Tunis
27. BAA plc: Aberdeen, Edinburgh, Glasgow, London-Heathrow, London-Gatwick, London-Stansted
28. Hanoi, Ho Chi Minh City
29. Livingstone, Lusaka, Mfuwe, Ndola
30. Bulawayo, Buffalo Range, Charles Pr., Harare, Hwange, Kariba, Masvingo, Victoria Falls

**Appendix 2 to Chapter 3. Primary sources for  
financing air navigation service providers**  
(breakdown of Table 3-4 by responding States, in alphabetical order)

STATE	Self-financing		National government		Foreign government loans or aid		Development banks or funds		Commercial loans (domestic)		Commercial loans (foreign)		Share capital		Other	
	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned
Algeria			x													
Argentina	x		x													
Australia	x	x								x	x	x	x			
Bangladesh	x		x		x											
Barbados	x		x					x		x						
Belgium	x							x								x
Bolivia	x		x		x			x								
Botswana		x	x					x								
Brazil	x		x									x				
Bulgaria	x							x				x				
Burkina Faso								x								x
Canada	x									x						x
Chile	x	x								x	x	x	x			
China (Hong Kong SAR)			x													
Costa Rica			x													
Cuba	x	x	x	x		x						x	x			
Czech Republic	x	x														
Denmark	x		x													
Egypt			x		x							x				
Eritrea	x		x			x								x		
Estonia	x											x				
Finland	x									x		x				
France	x	x								x	x					
Gambia	x					x		x								

STATE	Self-financing		National government		Foreign government loans or aid		Development banks or funds		Commercial loans (domestic)		Commercial loans (foreign)		Share capital		Other	
	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned
Germany	x								x				x			
Ghana	x				x				x		x					
Greece			x													
Haiti	x	x			x	x	x	x								
Iceland	x	x	x						x	x	x	x				
Iran( Islamic Republic of)	x		x							x				x		
Ireland	x								x		x					
Italy	x	x	x							x		x				
Jamaica	x	x	x				x									
Jordan		x	x													
Kenya	x		x		x		x									
Kuwait			x													
Latvia	x	x							x	x	x	x		x		
Lebanon	x		x				x									
Lesotho			x	x												
Lithuania	x	x	x	x			x	x			x	x				
Maldives	x		x		x		x				x		x			
Malta	x															
Mauritius			x													
Mexico			x													
Namibia		x	x		x											
Nepal	x		x		x		x			x						
Netherlands										x		x				
New Zealand	x									x		x		x		
Nigeria	x		x		x			x		x		x				
Norway	x	x														
Oman			x	x												
Panama	x										x					

STATE	Self-financing		National government		Foreign government loans or aid		Development banks or funds		Commercial loans (domestic)		Commercial loans (foreign)		Share capital		Other	
	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned
Poland	x	x								x		x	x			
Portugal	x						x									
Qatar	x									x						
Republic of Moldova	x											x				
Romania	x						x									
Russian Federation	x	x							x							
Saint Vincent and The Grenadines	x															
Sao Tome and Principe					x		x									
Saudi Arabia		x	x	x												
Senegal	x				x		x									
Singapore	x	x														
Slovakia	x	x					x	x								
Slovenia		x	x													
South Africa	x						x		x			x		x		
Spain	x															
Sri Lanka	x	x	x	x	x	x										
Swaziland		x	x		x											
Sweden	x	x								x	x					
Switzerland	x	x									x					
Tajikistan	x	x			x	x		x								
Tanzania	x		x		x		x									
Thailand		x				x				x	x			x	x	
The Former Yugoslav Republic of Macedonia	x				x		x					x			x	
Tunisia	x	x			x	x	x	x				x	x			
Turkmenistan	x	x	x	x			x	x				x	x			
Uganda	x															

STATE	Self-financing		National government		Foreign government loans or aid		Development banks or funds		Commercial loans (domestic)		Commercial loans (foreign)		Share capital		Other	
	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned	applied	planned
Ukraine	x	x					x	x	x	x	x	x				
United Kingdom	x		x							x				x		
United States	x		x												x	x
Uruguay	x		x											x		
Uzbekistan	x	x										x	x			
Viet Nam	x	x	x	x	x	x										
Zambia	x		x			x						x				
Zimbabwe	x	x	x		x			x				x	x	x		

# Chapter 4

## CAPACITY MANAGEMENT

### BACKGROUND

4.1 Capacity constraints at airports and in airspace are becoming an increasing challenge to the continued growth of air transport. In some regions, the limited availability and/or utilization of infrastructure has already led to serious problems, notably in the form of flight delays, with spillover effects worldwide. Current ICAO forecasts estimate an increase in the global demand for air transport at an average annual growth rate of 4.5 per cent for the period 1997-2020, with aircraft movements growing at an average annual growth rate of 3.5 per cent. In response to this demand, the world aircraft fleet is expected to almost double from some 10 000 aircraft in 1998 to almost 20 000 aircraft in 2020. This means that airports and air traffic management systems will be expected to accommodate almost a 2.7 fold increase in passenger traffic (somewhat more for freight traffic) and a doubling of aircraft movements by the year 2020. These forecasts are predicated on the assumption that sufficient system infrastructure and capacity will be available to handle the demand.

### INCREASING AVAILABILITY OF CAPACITY

4.2 Evidently the primary objective of the civil aviation community should be to increase the availability of capacity rather than to have to ration demand (this should also be a primary objective beyond the aviation sector, given the substantial contribution of civil aviation to the economy at large, both directly and indirectly).

4.3 There is scope for both an improvement in the utilization of existing infrastructure as well as its expansion. As regards utilization, examples of potential improvements are: better-coordinated air traffic flow management and airport scheduling; technology such as the communications, navigation and surveillance/air traffic management (CNS/ATM) systems; reduced aircraft separation; improved runway usage; airside and groundside facilitation at airports, etc.

4.4 That there is some potential for increasing capacity *per se* is evidenced from replies to the pre-conference questionnaire. Of the 91 responding States, 52 indicated that they have measures in effect and 25 additional States that they have measures planned for increasing airport capacity through runway/taxiway and/or terminal expansions (covering 132 international airports for which measures are in effect and 150 for which measures are planned). Regarding airspace, 42 States indicated that they have measures in effect and 21 additional States have measures planned for increasing capacity (for example, through additional facilities or staff) at the approach and aerodrome control level, while 38 States have measures in effect and 21 additional States have measures planned at the en-route level.

4.5 At the same time, it is also evident from the replies to the questionnaire that the potential for increasing capacity is limited. Of the 77 States with measures in effect or planned for increasing capacity at airports, 25 also indicated that they had measures in effect or planned to assign certain traffic (on the basis, for example, of aircraft size or origin/destination) from one airport to another; 44 States also indicated that slot allocation was in effect or planned, 23 States that peak charges were in effect or planned and 22 States that high minimum charges were in effect or planned. Similarly, of the 63 States with measures to increase capacity



for approach and aerodrome control, 37 States were also involved in slot allocation, 18 States with peak charges, and 8 States with high minimum charges. Finally, of the 59 States with measures to increase capacity at the en-route level, 25 States were also involved with slot allocation, and 10 States with various charging mechanisms.

4.6 In practice, despite the very considerable efforts being made to overcome infrastructure constraints, and even assuming funding requirements can be met, there are physical and increasing environmental limitations on the supply of infrastructure which not only have the potential to lead to local monopoly but also place limitations on the supply of operations. In this context, the present chapter focuses on the economic instruments of slot allocation and charging mechanisms.

## ECONOMIC INSTRUMENTS

4.7 In the questionnaire responses, 77 States indicated that they were experiencing lack of capacity at one or more of their international airports, with slot allocation measures in effect at 74 airports and planned for 25 airports (see Table 4-1). Nearly half these airports are in Europe, but slot allocation measures are also in effect at 20 airports in the Caribbean/Central and South America, 11 airports in Asia/Pacific and 12 airports in Africa (see breakdown by State and by airport in Appendix 1 to this chapter). Peak charges are reported in effect at 33 airports and planned at 34, again predominantly in Europe but with Caribbean/Central and South America once more being significant. High minimum charges are reported in effect at 19 airports (14 in Europe), but planned for 30 (11 in Caribbean/Central and South America and 11 in Africa). Other economic measures indicated include slot violation penalties (1 State) and noise charges (specified by 2 States but known to be applied more widely, although not necessarily for capacity management) and charging based on weight and time (1 State).

**Table 4-1. Airport capacity management in 77 States**

Measures	Increased capacity		Reassign traffic		Slot allocation		Peak charges		High minimum charges		Other	
	States	Airports	States	Airports	States	Airports	States	Airports	States	Airports	States	Airports
In effect	52	132	10	20	33	74	11	33	11	19	5	11
Planned	25	150	15	36	11	25	12	34	11	30	4	4

**Table 4-2. Approach and aerodrome control capacity management in 63 States**

Measures	Increased capacity	Slot allocation	Peak charges	High minimum charges	Other
	Number of States				
In effect	42	26	4	3	4
Planned	21	11	14	5	2

4.8 Turning to management of approach and aerodrome control capacity (Table 4-2 and Appendix 2 to this chapter), of the 63 States indicating lack of capacity, 26 have slot allocation in effect and in another 11 States such measures are planned, with Asia/Pacific here being the most significant region, ahead of Europe, the Middle East and Africa. Peak charges are reported in only 4 States, but planned in another 14 States, with Asia/Pacific predominating. High minimum charges are reported to be in effect in 3 States and planned in another 5 States. Other measures indicated are essentially technical rather than economic, such as automated information processing, ATS sequencing, ground relay programme, air traffic management tools, etc.

4.9 Regarding management of en-route capacity (Table 4.3 and Appendix 3 to this chapter), of the 59 States indicating lack of capacity, at the national level 17 States have slot allocation in effect with another 8 planning slot allocation measures. Asia/Pacific and Europe again head the list on a regional basis. Only 3 States presently have charging mechanisms in effect for management of en route capacity and 7 additional States have plans for them. As for other measures at the national level, these are again essentially technical, including minimum departure intervals, reduced vertical separation minimum (RVSM), automated information processing, change in ATS structure and sequencing, centralized flow management unit (CFMU), etc. As far as international measures are concerned, States in Europe mentioned air traffic flow management (ATFM) through the CFMU, implementation of basic area navigation (BRNAV) routings, and RVSM; other States mentioned international cooperation (2 States), area navigation (RNAV) and RVSM (1 State), restructured route network and RVSM (1 State) and flight information region (FIR) flow control measures (1 State).

4.10 One conclusion that can be drawn from the above survey is that congestion is now a worldwide problem. While Europe predominates in terms of numbers of airports affected, the lack of capacity in that region has repercussions worldwide, and as far as airways are concerned there are clearly capacity problems in all regions, even if not yet widespread within each region.

4.11 Given the limited potential for improving utilization and increasing capacity and the continuing traffic growth in all regions, economic instruments for capacity management are inevitably going to be of increasing significance, with implications in the international arena.

4.12 Peak pricing has proved to be of limited effectiveness for capacity management, partly because of schedule constraints and the fact that airport and en route charges account for a relatively small portion of airline operating costs (5.4 per cent and 2.8 per cent respectively in 1998) and hence are relatively price inelastic. Peak pricing can, if not carefully designed, also raise issues of cost relationship and equity. High minimum charges have, however, proven effective at moving general aviation traffic from congested major airports principally serving commercial traffic to secondary airports primarily catering to general aviation.

**Table 4-3. National en route capacity management measures in 59 States**

Measures	Increased capacity	Slot allocation	Charging mechanisms	Other
	Number of States			
In effect	38	17	3	6
Planned	21	8	7	2

4.13           Regarding slot allocation, the ICAO Secretariat has completed a study on the allocation of flight departure and arrival slots at international airports. This study was reviewed by the Air Transport Committee in March 2000 and was published in 2001 as Circular 283. The study concentrates on: the regulatory implications of the current situation and trends for airports where the demand of airlines exceeds airport capacity (on a continuous basis or during peak periods); the regulatory framework involved; and the means by which States, airports and airlines have sought to alleviate or minimize this situation. The study also assesses current and potential mechanisms for dealing with a chronic shortage of airport capacity and suggests possible improvements.

4.14           While the study addresses the linkage between airspace congestion and airport congestion, it does not address the potential issue of slot allocation for air traffic management *per se*, focusing on airport capacity management (encompassing approach and aerodrome control, runway and terminal capacity). A factor of increasing concern, notably in Europe, is that air traffic capacity management and airport capacity management are generally handled by completely different mechanisms with different planning and implementation time frames.

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**Appendix 1 to Chapter 4. Capacity management of airports**  
(breakdown of Table 4-1 by responding States, in alphabetical order)

STATE Airport	Increased capacity		Reassign traffic		Slot allocation		Peak charges		High minimum charges		Other	
	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned
ARGENTINA Aeroparque Ezeiza	x	x			x		x					
AUSTRALIA Brisbane Melbourne Perth Sydney	x				x	x			x	x		x
AUSTRIA Vienna		x										
AZERBAIJAN Baku												
BAHRAIN Bahrain		x								x		
BANGLADESH Dhaka		x			x							
BARBADOS Bridgetown		x										
BELGIUM Antwerpen Bruxelles Charleroi Liege Oostende	x			x		x		x		x		
BOLIVIA Cochabamba La Paz Santa Cruz												
BOTSWANA Francistown Gaborone Ghanzi Kasane Maun Selebi-Phikwe		x										
BRAZIL Manaus Porto Alegre Recife	x		x		x			x				

STATE Airport	Increased capacity		Reassign traffic		Slot allocation		Peak charges		High minimum charges		Other	
	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned
Rio De Janeiro	x		x		x			x				
Salvador	x		x		x			x				
Sao Paulo	x		x		x			x				
BRUNEI Brunei		x	x		x		x		x			
BULGARIA Sofia		x			x			x				
BURKINA FASO Bobo-Dioulasso Ouagadougou				x								
CAMEROON Douala Garoua Yaounde												
CANADA Calgary	x											
Edmonton	x											
Gander	x											
Halifax	x											
Montreal Mirabel	x		x									
Montreal Dorval	x		x									
Ottawa	x											
Toronto	x											
Vancouver	x											
Winnipeg	x											
CHILE Santiago	x				x			x		x		
CHINA Hong Kong												
COSTA RICA Liberia		x										
San Jose	x	x		x								
San Jose-Tobias Bolano		x										
CUBA Habana	x	x				x						
CZECH REPUBLIC Praha		x			x							
DENMARK Kobenhavn	x				x							
ECUADOR Guayaquil		x	x		x		x					
Quito		x	x		x		x					

STATE Airport	Increased capacity		Reassign traffic		Slot allocation		Peak charges		High minimum charges		Other	
	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned
EGYPT												
Alexandria	x	x	x									
Aswan	x	x	x									
Hurghada	x	x	x									
Luxor	x	x	x									
Sharm El Sheikh	x	x	x									
ERITREA												
Asmara		x										
ESTONIA												
Tallinn	x	x										
FINLAND												
Helsinki	x				x				x			
FRANCE												
Lyon												
Marseille	x	x										
Nice	x	x										
Paris Ch-de-Gaulle	x	x			x				x			
Paris Orly	x	x			x				x			
Toulouse	x	x										
FRANCE-SWITZERLAND												
Bale/Mulhouse	x	x										
GAMBIA												
Banjul	x					x						
GEORGIA												
Tbilisi												
GERMANY												
Berlin		x										
Bremen	x	x										
Dresden	x											
Dusseldorf	x											
Erfurt	x	x									x	x
Frankfurt-Main	x	x				x			x			
Hamburg	x											
Hannover	x											
Koln-Bonn		x				x						
Munchen	x											
Munster	x	x										
Nurnberg	x	x										
Saarbrucken	x											
Stuttgart	x	x			x							
GHANA												
Accra	x				x			x		x		

STATE	Increased capacity		Reassign traffic		Slot allocation		Peak charges		High minimum charges		Other		
	Airport	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned
GREECE													
Athinai		x	x			x		x				x	
Chania			x			x		x				x	
Kerkyra			x			x		x				x	
Kos			x			x		x				x	
Rhodes			x			x		x				x	
Thessaloniki			x			x		x				x	
Zakynthos			x			x		x				x	
HAITI													
Port-au-Prince			x		x		x		x			x	
ICELAND													
Reykjavik		x											
INDONESIA													
Melanguane		x	x										
IRAN (ISLAMIC REPUBLIC OF)													
Teheran		x			x		x			x			
IRELAND													
Cork		x	x				x						
Dublin		x	x				x						
Shannon		x	x				x						
ITALY													
Bologna													
Napoli													
Roma													
JAMAICA													
Kingston		x	x										
Montego Bay		x	x										
JAPAN													
Osaka			x				x						
Tokyo Narita		x	x			x							
JORDAN													
Amman			x		x								
KENYA													
Nairobi		x			x	x			x			x	
LEBANON													
Beirut		x											
LITHUANIA													
Kaunas													
Palanga													
Siauliai													
Vilnius													
MALDIVES													
Male		x	x			x	x		x			x	





STATE Airport	Increased capacity		Reassign traffic		Slot allocation		Peak charges		High minimum charges		Other	
	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned
OMAN Muscat		x										
PAKISTAN Karachi Lahore												
PANAMA Panama City		x										
POLAND Warszawa		x										
QATAR Doha												
REPUBLIC OF MOLDOVA Kishinev	x											
ROMANIA Bucuresti	x	x		x	x							x
RUSSIAN FEDERATION Khabarovsk Moscow Rostov-na-donu Sankt-Peterburg	x								x			
SAINT VINCENT AND THE GRENADINES Kingstown		x										
SAO TOME AND PRINCIPE Sao Tome		x										
SAUDI ARABIA Jeddah Riyadh	x	x										
SINGAPORE Singapore	x	x			x							
SLOVAKIA Bratislava Kosice Piestany Sliac Tatry		x		x		x		x		x		
SLOVENIA Ljubljana Maribor Portoroz	x					x		x				
SOUTH AFRICA Bloemfontein Cape Town	x	x					x		x		x	



STATE	Increased capacity		Reassign traffic		Slot allocation		Peak charges		High minimum charges		Other	
	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned
Birmingham	x	x			x			x		x		
Bristol												
Cardiff		x										
East Midlands	x	x										
Edinburgh	x	x			x		x					
Glasgow	x	x			x		x					
London City		x			x		x		x			
London Gatwick	x	x			x		x					
London Heathrow	x	x			x		x					
London Stansted	x	x			x		x					
Manchester	x	x			x			x	x	x		
Newcastle	x	x										
UNITED REPUBLIC OF TANZANIA												
Arusha/Moshi	x		x		x		x		x		x	
UNITED STATES												
Atlanta												
Chicago	x	x			x							
Dallas	x	x										
Los Angeles	x	x	x	x								
New York	x	x	x	x			x	x				
San Francisco												
URUGUAY												
Montevideo		x		x		x		x		x		
UZBEKISTAN												
Tashkent	x											
VIET NAM												
Hanoi	x				x	x						
ZAMBIA												
Lusaka		x		x		x		x		x		
ZIMBABWE												
Buffalo Range	x	x		x	x			x		x		
Bulawayo	x	x		x	x			x		x		
Harare	x	x		x	x			x		x		
Hwange	x	x		x	x			x		x		
Kariba	x	x		x	x			x		x		
Masvingo	x	x		x	x			x		x		
Victoria Falls	x	x		x	x			x		x		

### Appendix 2 to Chapter 4. Capacity management of air navigation services — approach and aerodrome level

STATE	Increased capacity		Slot allocation		Peak charges		High minimum charges		Other	
	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned
ARGENTINA	x		x			x				
AUSTRALIA			x						x	x
BAHRAIN	x		x							
BELGIUM		x								
BOLIVIA	x									
BOTSWANA		x								
BRAZIL	x		x			x				
BURKINA FASO	x									
CANADA	x								x	
CHILE		x	x			x		x		
CHINA	x		x							
COSTA RICA		x		x						
CUBA	x	x		x						
CZECH REPUBLIC		x								
ECUADOR		x		x						
EGYPT	x	x	x							
ERITREA	x									
ESTONIA		x								
FINLAND	x		x				x			
FRANCE	x	x								
GAMBIA	x		x			x		x		
GEORGIA		x								
GERMANY	x	x	x							
GREECE	x		x							
HAITI		x								
ICELAND		x								
IRAN (ISLAMIC REPUBLIC OF)	x			x		x	x			
IRELAND	x									
JAMAICA	x									
JORDAN	x									
KENYA	x	x								
KUWAIT		x		x		x				
LATVIA		x								
LEBANON	x			x						
MALDIVES		x	x	x		x				

STATE	Increased capacity		Slot allocation		Peak charges		High minimum charges		Other	
	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned
MAURITANIA	x	x								
MEXICO	x		x							
NAMIBIA		x		x						
NEPAL		x		x		x		x		
NETHERLANDS		x	x				x			
NEW ZEALAND		x								
NIGERIA	x	x	x	x		x				
OMAN				x						
POLAND	x									
PORTUGAL	x									
QATAR			x							
REPUBLIC OF MOLDOVA		x								
RUSSIAN FEDERATION	x		x		x				x	x
SAUDI ARABIA			x							
SINGAPORE	x	x	x							
SLOVENIA		x								
SOUTH AFRICA	x	x	x							x
SRI LANKA	x		x			x				
SWAZILAND	x									
SWEDEN	x	x	x	x						
SWITZERLAND	x					x			x	
TAJIKISTAN	x		x		x	x				
THAILAND	x									
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA	x									
TUNISIA	x	x		x		x				
TURKMENISTAN	x	x								
UGANDA		x								
UNITED STATES	x	x	x							
UZBEKISTAN	x	x			x	x				
VIET NAM	x	x	x	x	x	x				
ZAMBIA		x	x			x		x		x
ZIMBABWE	x	x		x		x		x		

### Appendix 3 to Chapter 4. Capacity management of air navigation services — en route level

STATE	National measures										International measures	
	Unspecified		Increased capacity		Slot allocation		Charging mechanisms		Other		In effect	Planned
	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned		
ARGENTINA			x	x	x			x				
AUSTRALIA										x	x	
BAHRAIN			x									
BOLIVIA				x								
BOTSWANA		x		x								
BRAZIL			x									
BULGARIA			x	x								
CANADA			x		x							x
CHILE				x	x			x				
CHINA			x		x						x	
CUBA			x	x		x				x		
CZECH REPUBLIC	x		x	x	x	x				x		x
ECUADOR				x		x						
EGYPT			x		x							
ERITREA			x									
ESTONIA				x								
FINLAND			x		x							
FRANCE										x	x	
GEORGIA				x								
GERMANY			x	x	x						x	x
GREECE	x		x		x							
HAITI				x								
ICELAND				x								
IRAN (ISLAMIC REPUBLIC OF)	x		x			x						x
IRELAND				x								
JAMAICA			x									
JORDAN			x									x
KENYA			x	x			x					
KUWAIT		x		x		x		x				
LATVIA	x	x	x	x								
LEBANON			x		x		x					
MALDIVES												
MAURITANIA			x	x								
MEXICO			x		x							
NAMIBIA				x		x						

STATE	National measures										International measures	
	Unspecified		Increased capacity		Slot allocation		Charging mechanisms		Other			
	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned	In effect	Planned
NETHERLANDS				x								
NEW ZEALAND				x								
NIGERIA	x		x		x			x				
OMAN				x								
POLAND			x									
PORTUGAL	x		x									
REPUBLIC OF MOLDOVA				x								x
RUSSIAN FEDERATION									x	x		
SAUDI ARABIA			x									
SINGAPORE			x	x	x							
SLOVAKIA				x								x
SLOVENIA				x	x							x
SOUTH AFRICA			x	x					x			x
SRI LANKA			x					x				
SWAZILAND				x								x
SWEDEN			x	x				x				x
SWITZERLAND			x							x		x
TAJIKISTAN			x			x						
THAILAND			x									
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA			x									
TUNISIA			x	x		x						
TURKMENISTAN			x	x								
UGANDA				x								
UNITED STATES			x	x								
UZBEKISTAN			x	x	x	x						
VIET NAM			x	x	x	x						x
ZAMBIA				x	x			x				x
ZIMBABWE		x		x		x		x				

# Chapter 5

## ECONOMIC REGULATION

### BACKGROUND

5.1 This chapter reports on responses to a survey of States as to their practices with regard to economic regulation in the provision of airports and air navigation services. Fundamental changes have taken place over the last two decades with regard to the organizational form under which the majority of international airports and air navigation services are provided. This has been brought about primarily by two factors. First, governments have been faced with the need to provide funds for the high-volume capital investments required in airports and air navigation services so as to accommodate rapid growth in traffic as well as to maintain high levels of safety. Second, growth in traffic has enabled a greatly expanded number of airports and air navigation services providers to become financially viable, which in turn has led many governments to transfer the operation (and in some cases the ownership) of airports and air navigation services to financially autonomous bodies. At the same time, the establishment of financially autonomous bodies can be claimed as the single most significant factor in bringing about the improvement in the financial situation of airports and air navigation services. These organizational developments have given rise in many States to a requirement for introducing specific economic regulation of airports and air navigation services or changes to existing regulation.

5.2 The airline industry, the main user of airports and air navigation services (and usually the principal revenue contributor), has by and large shown small profits over recent decades; airports and the provision of air navigation services, however, have generally not been profitable. Marked improvements in the finances of service providers have been seen over the last decade with the number of airports and air navigation services providers showing revenues in excess of expenses having greatly increased, and with major international airports around the world largely being profitable. But while major airports have been profitable, a very large number (a majority of airports listed as being open to international civil aviation) have not, and the majority of air navigation services providers also still do not recover their total costs. (See Chapter 2 for a detailed analysis of the financial situation of airports and air navigation services.)

### REGULATORY PRACTICES

#### ***Who determines charges on air traffic***

5.3 States were asked about their regulatory practices in the pre-conference questionnaire. Table 5-1 summarizes by region the practice in 92 States as to who determines airport and air navigation services charges. Airport charges in 51 States and air navigation services charges in 49 States are determined by the airport/air navigation services provider, with government approval. Airport charges are determined directly by the government in 27 States, and air navigation services charges in 25 States. The provider independently determines airport charges in 13 States and air navigation services charges in 12 States. A conclusion is that in the majority of States, charges are either determined by the government or subject to government approval.



**Table 5-1. Entity determining charges on air traffic**

Region	Number of States	Provider independently		Provider with government approval		Government	
		Airport charges	ANS charges	Airport charges	ANS charges	Airport charges	ANS charges
Asia Pacific	12	1	2	9	6	2	3
Middle East	8	–	–	5	5	3	3
Africa	21	2	2	12	12	6	3
Europe	34	8	6	19	23	6	5
North America	2	2	1	–	–	–	1
Caribbean, Central and South America	15	–	1	6	3	10	10
TOTAL	92	13	12	51	49	27	25

**Table 5-2. Main determinants in setting airport charges**

Region	Number of States	Cost-based charges	Transparent accounting system	Mandatory consultation with users	ICAO cost recovery policy	Inter-governmental factors	Other
Asia Pacific	12	7	6	4	5	–	4
Middle East	8	5	3	3	6	–	1
Africa	21	10	6	8	12	2	1
Europe	34	15	15	13	15	6	2
North America	2	2	2	2	–	1	–
Caribbean, Central and South America	14	9	5	3	5	3	–
TOTAL	91	48	37	33	43	12	8

### ***Main determinants applied in setting airport and air navigation services charges***

5.4 States were requested to indicate the main determinants applied in setting airport and air navigation services charges from the following: cost-based charges; transparent accounting system clearly identifying sources of income and categories of expenses; mandatory consultation with users; ICAO cost recovery policy; and intergovernmental factors (e.g. obligations emanating from bilateral air services agreements and regional regulatory policy agreements). Indication of multiple determinants was anticipated and received.

5.5 Tables 5-2 and 5-3 show that of the 91 States responding, 48 indicated that airport charges were cost-based and 59 indicated that air navigation services charges were cost-based, while 43 States confirmed that they follow ICAO cost recovery policy in setting charges for airports and 55 did so in setting

charges for air navigation services. The majority of States reporting that their charges are cost-based reported also that they follow ICAO cost recovery policy (25 out of 48 for airports and 43 out of 59 for air navigation services). It is of interest that the application of the two determinants outlined above is not as frequent with regard to airports as it is with regard to air navigation services. The reason for this is probably that autonomous bodies and privatization have featured in airport operations in a much larger number of instances and over a longer period of time than is the case for air navigation services.

5.6 Thirty-seven States advised that they applied a transparent accounting system for their airports and 40 States advised they did so for air navigation services. As to mandatory consultations with users, 33 States affirmed their existence in setting airport charges and 40 States in setting air navigation services charges. Only 12 States cited intergovernmental factors as one of the main determinants for setting airport charges and 14 States cited such factors for setting air navigation services charges. Other methods reported include setting a “price cap” on the charges levied; two States referred to the principles applied by the international operating agency providing the air navigation services on their behalf.

### ***Specific regulatory provisions***

5.7 States were requested to indicate if their government had in effect or planned any specific regulatory provisions for airports and/or air navigation services with regard to abuse of monopoly and, for airports only, ground handling arrangements. Responses were received from 54 States and are summarized by region in Table 5-4 (Appendix 1 to this chapter provides the breakdown by responding States).

5.8 Of the 54 States responding to these questions, with regard to airports 26 confirmed that they already had specific regulatory provisions regarding abuse of monopoly while 16 are planning their introduction. With respect to air navigation services, 22 States affirmed the existence of regulatory provisions regarding abuse of monopoly and four States reported that they are planning to introduce such provisions. The replies indicate that in States where there is independence from the government in the provision of airports in particular or air navigation services, this has tended to lead to the introduction of regulatory provisions aimed at preventing abuse of a monopoly position.

**Table 5-3. Main determinants in setting air navigation services charges**

Region	Number of States	Cost-based charges	Transparent accounting system	Mandatory consultation with users	ICAO cost recovery policy	Inter-governmental factors	Other
Asia Pacific	12	6	5	5	7	–	2
Middle East	8	4	2	4	5	1	–
Africa	21	10	5	9	13	2	1
Europe	34	27	20	17	21	7	3
North America	2	2	2	2	2	2	–
Caribbean, Central and South America	14	10	6	3	7	2	–
TOTAL	91	59	40	40	55	14	6

**Table 5-4. Special regulatory provisions**

Region	Number of States	Abuse of monopoly				Ground handling arrangements	
		Airports		Air navigation services		Airports	
		In effect	Planned	In effect	Planned	In effect	Planned
Asia Pacific	5	1	2	2	0	1	3
Middle East	4	0	2	0	0	2	2
Africa	14	9	3	6	2	6	4
Europe	21	9	7	8	2	12	7
North America	2	0	1	1	0	1	0
Caribbean, Central and South America	8	5	2	5	0	6	1
TOTAL	54	26	16	22	4	28	17

5.9 As regards regulatory provisions for ground handling arrangements at airports, 28 States indicated that they are already in effect and 17 States reported that they are planning their introduction. Some States in Europe referred to the applicability of European Union Directives for ground handling arrangements at their airports. A more broadly applicable observation is that it appears that an increasing number of States are opening ground handling to competition.

5.10 Two general comments with regard to the response to the survey. First is the wide range, in both economic and geographical terms, of States that responded and where economic regulation is applied; and second is that economic regulation is applied in number of instances where airports and/or air navigation services in the State concerned are not operated by a financially autonomous body.

**Appendix 1 to Chapter 5. Special regulatory provisions**  
(breakdown of Table 5-1 by responding States, in alphabetical order)

Note.— See also “Details of provisions” hereafter

STATE	Abuse of Monopoly				Ground handling arrangements	
	Airports		Air navigation services		Airports	
	In effect	Planned	In effect	Planned	In effect	Planned
1	2	3	4	5	6	7
Argentina		x			x	
Australia	x		x			
Bangladesh		x				x
Belgium		x	x		x	
Burkina Faso	x					x
Canada	x		x			
Chile	x		x		x	
Costa Rica	x		x			
Ecuador	x		x		x	
Eritrea		x		x		
Estonia	x		x			
Finland	x		x			
France	x				x	
Gambia	x		x		x	
Georgia		x	x		x	
Ghana						
Greece					x	
Iceland					x	x
Iran, Islamic Republic of		x			x	
Italy	x	x			x	x
Jamaica		x				x
Jordan		x				x
Kenya	x		x			
Kuwait						x
Maldives					x	x
Malta	x					x
Mauritius	x				x	
Mexico	x		x		x	
Morocco		x				x
Namibia		x		x		x
Netherlands (Aruba)					x	
Netherlands		x				
New Zealand		x				x
Nigeria	x				x	
Oman					x	

STATE	Abuse of Monopoly				Ground handling arrangements	
	Airports		Air navigation services		Airports	
	In effect	Planned	In effect	Planned	In effect	Planned
1	2	3	4	5	6	7
Panama	x		x		x	
Republic of Moldova	x		x			x
The Former Yugoslav Republic of Macedonia		x	x			x
Romania						x
Russian Federation	x		x		x	
Senegal					x	
Slovakia		x			x	
Slovenia		x		x		x
South Africa	x		x			
Sweden					x	
Switzerland					x	
Turkey	x				x	
Ukraine			x			
United Kingdom	x			x	x	
United States	x				x	
United Republic of Tanzania	x		x			x
Uzbekistan			x			
Zambia	x		x		x	
Zimbabwe	x		x		x	

#### DETAILS OF PROVISIONS<sup>1</sup>

##### Argentina

3 "Abuse of monopoly — rates of charges regulated by ORSNA/CRA."

6 "Ground handling arrangements — charged to a concessionaire, potential self-loan."

##### Australia

2 "Determinations and directions under the Prices Surveillance Act 1983 administered by the Australian Competition and Consumer Commission."

4 "Airservices is subject to the general provisions of the Trade Practices Act 1974, which prohibits misleading or deceptive conduct and anti-competitive behaviour in trade and commerce. In addition, Airservices is subject to economic regulation by the Australian Competition and Consumer Commission. Prices for the terminal navigation, en route and aviation rescue and fire fighting services provided by Airservices Australia are classified as "declared services" for the purposes of the Prices Surveillance Act 1983 and the Commission is therefore required by law to be notified and agree to any increases in service prices or changes to the structure of those prices. In considering pricing notifications, the Commission has

regard inter alia to not only the cost of services, but also the efficiency of the underlying cost base of the organisation, as well as the reasonableness of the consequential rates of return generated.

In terms of planned measures to limit any potential abuse of monopoly position, the Australian Government is currently considering policy options involving the introduction of competition in the provision of terminal navigation and aviation rescue and fire fighting services."

##### Belgium

6 "Ground handling: AP regulating market access for ground handling services at Brussels National Airport (12/99)."

##### Burkina Faso

7 In order to address the monopoly aspect of ground handling operations performed by Air Afrique, the Committee of Ministers of Transport of States parties to the Yaoundé Treaty (creating Air Afrique) has re-affirmed the establishment in each State of a partnership with a third party for ground handling operations.

1. A number preceding a note refers to the column number in the table; otherwise the note refers to all columns.

**Canada**

2, 4 "By statute, airport authorities in Canada, and Nav Canada, must operate as 'not-for-profit' corporations and cannot issue dividends. Also, the Board of Directors of airport authorities consist of local interests. Nav Canada's Board of Directors consist of industry, union and government representatives, with industry forming a majority. These features provide for a system of 'checks and balances'".

**Chile**

2, 4 "Abuse of monopoly: there are generally applicable standards to protect the free market (or competition)."

6 "In bilateral policies, there is a clause which states that all airlines are entitled to the ground handling services they wish. There is also free choice of suppliers (including the airline itself)"

**Ecuador**

"Law on the Modernization of the State, Privatizations and Provision of Public Services by Private Initiative and the substitutive Regulations of this Law in force as from December 1994.

Article 47 states that: 'the existence of monopolies in any form is prohibited and consequently third parties are authorized to establish activities or provide services of the same or a similar nature'.

This aspect covers or includes port facilities. In spite of this, at present the airport and air navigation infrastructure services are provided by the DGCA and the ground handling services are provided by a mixed enterprise, 'Globe Ground' ".

**Eritrea**

3, 5 "The details of specific regulatory provisions as reviewed by the Civil Aviation Department are indicated in AIP Eritrea."

**Estonia**

2, 4 "The contest law sets certain limitations to the tariff determination of monopoly services providers (providers having more than 40% of market share — like Tallinn airport and Estonian ANS).

The public procurement law regulates the purchase procedures of monopoly entities."

**France**

2 "Modifications to aeronautical charges proposed by the service providers are presented for approval by a consultative commission which includes the users. The State has the right to oppose.

6 The European directive 96/67 CE on ground handling services has been included in the French Legislation."

**Gambia**

6 "Ground handling, although operated as an airport concession government has granted exclusive rights to the national carrier for an indefinite period."

**Georgia**

"An antimonopoly service has been established at the Ministry of Economic in Georgia. A law on monopolies and an order on monopolists with a list of organizations and types of activities falling under the effect of the law on monopolies have been issued. "Sakaeronavigatsia" falls under the effect of this order for en-route control services and it is obliged to coordinate the rates of the charges for en-route services."

**Ghana**

"Generally there are plans to amend/update the Civil Aviation Regulations."

**Iceland**

6, 7 "Additional providers of ground handling services are being introduced at Keflavik Airport."

**Iran (Islamic Republic of)**

6 "In ground handling arrangements uniformity is carried out among the handling agents."

**Italy**

2, 3 "Abuse of monopoly: In Italy the Anti-Trust Law is quite complete. Furthermore, specific regulatory provisions are planned to give criteria for landing and take-off charges so to avoid abuse of dominant position."

6, 7 "Ground handling arrangements: The main reference is represented by E.U. Directive n. 96/67, duly enhanced in the Italian legal system. The definition of operative rules on ground handling is still in process."

**Jamaica**

3, 7 "Upon privatization of one of the two international airports, the Jamaican Civil Aviation Authority will assume the role of economic regulator and will therefore address issues related to abuse of monopoly power including ground handling arrangements."

**Kuwait**

7 "The Civil Aviation Authority seeks to introduce the elements of competition and privatization in the provision of ground handling services at the Kuwait International Airport."

**Malta**

2, 7 "Luqa Airport is Malta's only airport open for all types of traffic. It has been operated by a Government owned Company since 1 May 1998 as a licensed aerodrome. For this reason legislation requires the airport operator to provide services to all users on an equal basis. Airport charges require Government approval. With Malta's projected entry into the European Union (EU), directives/regulations applicable within the Union will become applicable in Malta after accession. There are EU directives/regulations which cover ground handling arrangements."

**Mexico**

2, 4, 6 "There is the Federal Commission of Economic Competency that regulates these provisions based on the Federal Law of Economic Competency."

**Netherlands**

3 "Airport charges are determined by the airport providers. In the actual situation profits from non-aeronautical activities make an appropriate contribution towards the (small) losses from aeronautical activities (single-till-principle).

Airport charges are subject to government approval; a clear regulatory framework is missing however. Rate of return regulation based on the 'reasonable rate of return' - principle is an option but offers no incentives to improve efficiency."

**New Zealand**

3, 7 "Consultation and disclosure regulations come into effect 1 January 2000 for setting of user charges for the non-contestable activities and service provided."

**Oman**

6 "There are currently provisions for a concession agreement to a local company for the provision of ground services. This agreement will expire during the next two years and the Government is contemplating its non-renewal in order to open the floor to competition."

**Republic of Moldova**

2, 4, 7 "In accordance with the law of the Republic of Moldova on the limitation of monopoly activities and the development of competition, by a government decree on the regulation of monopolies in the national economy, the provisions approved by the State civil aviation administration regulate: the list of economic subjects in the area of natural monopolies; the list of charges for monopoly services; the tariff-fixing basis, the size and order of the application of tariffs; the list of services provided upon payment of each type of charge."

**Russian Federation**

2, 4, 6 "Russian Federation law of 22/3/91 'Competition and limitation of monopolistic activity on commodity markets' "

**Slovenia**

3, 5, 7 "We are preparing a new civil aviation legislation."

**South Africa**

2, 4 "An independent regulating committee which regulates the affairs of airports and air navigation services is appointed by the minister of Transport."

**Sweden**

6 "Sweden is implementing the European Union Directive regarding Ground Handling."

**Switzerland**

6 "More than one handling agent on international airports, leading to a competition situation, i.e. the user has the choice between various providers."

**The former Yugoslav Republic of Macedonia**

3, 4, 7 "Our DGCA strictly follows the ICAO Doc 9082 and regarding to the airports, the privatization and diversion of the commercially oriented activities are being planned."

**United Kingdom**

2 "Abuse of monopoly - regulator can investigate complaints about abuse of a dominant position or discriminatory practices, and improve conditions to rectify the situation and prevent recurrence."

Government appoints an independent economic regulator who reviews and provides regulatory price caps to those parts of the business where it is deemed services are either non contestable or there is market dominance. Currently four airports are subject to economic regulation (Heathrow, Gatwick, Stansted and Manchester). It is also planned to make the NATS Public/Private Partnership subject to economic regulation.

6 Ground handling — U.K. airports are subject to regulations requiring market liberalisation. These are based on EC Directive."

**United Republic of Tanzania**

2, 4 "The government observes the accepted International practice of Consulting with users before any major change is implemented for both Airports and Air Navigation Service provision."

7 With regards to Ground Handling there are plans to select a concessionaire through open tender, and when traffic allows to engage more than one service provider for an airport."

**United States**

2, 6 "To receive federal airport improvement funds, an airport must agree that it will operate its airport in an economically non-discriminatory manner. The "economic nondiscrimination" grant assurance implements the provision of 49 U.S.C. 4707) a) (1) through (6). In pertinent part, these require the airport sponsor to make the airport available as an airport for public use on reasonable terms and without unjust discrimination, to any person, firm, or corporation, to conduct or to engage in any aeronautical activity for furnishing services to the public at that airport. 49 U.S.C. 4707 (1); Grand assurance 22a, 62 Federal Register 29761, 29766 (June 2, 1997)."

**Zimbabwe**

2, 4 "Regulatory provisions are in effect and are currently being reviewed."

6 "Ground handling services have been tendered to introduce competition."

# Attachment A

## SURVEY QUESTIONNAIRE

(sent as an attachment to State Letter SR 167/1-99/108)

### CONFERENCE ON THE ECONOMICS OF AIRPORTS AND AIR NAVIGATION SERVICES (ANSCConf 2000)

#### QUESTIONNAIRE

##### COVERAGE

This questionnaire is divided into three parts. Part 1 — Airports, should be completed for those airports having a combined total of at least 90 per cent of the total international commercial traffic (scheduled and non-scheduled) of all airports in your State; Part 2 — Air Navigation Services, should be completed with regard to all such services which your State has accepted the responsibility for providing; and Part 3 — Regulatory Aspects, should be completed with regard to economic regulatory practices applicable to airports and air navigation services in your State. Any additional input or comments you may wish to provide may be written on the questionnaire or supplied on a separate sheet.

##### PART 1 — AIRPORTS

To answer questions 1.1 to 1.9 please use, if possible (and practicable), one copy of this part of the questionnaire for each major international airport or for those international airports managed as a group, especially where there are differences in organization and ownership.

**Airport(s):** \_\_\_\_\_

##### ORGANIZATION

1.1 Indicate below the overall structure of ownership and operation of the airport(s), currently and as planned:

	<i>Structure</i>	
	<i>Current</i>	<i>Planned</i>
a) Government owned autonomous airport entity	<input type="checkbox"/>	<input type="checkbox"/>
b) Directorate of civil aviation	<input type="checkbox"/>	<input type="checkbox"/>
c) Ministry or other national government department	<input type="checkbox"/>	<input type="checkbox"/>
d) Regional or municipal government	<input type="checkbox"/>	<input type="checkbox"/>
e) Private interests operating the airport(s) under a concession or leasing arrangement	<input type="checkbox"/>	<input type="checkbox"/>
f) Privately owned airport entity	<input type="checkbox"/>	<input type="checkbox"/>
g) Other, please specify	<input type="checkbox"/>	<input type="checkbox"/>



- 1.2 If the ownership of the airport(s) currently includes, or is planned to include, private interests, indicate the percentage of capital owned by:

	<i>Per cent of capital</i>	
	<i>Current</i>	<i>Planned</i>
a) Private interests	_____	_____
b) Government or other public interests	_____	_____

- 1.3 Indicate where private domestic and/or foreign interests own and/or operate any of the following major airport areas or services:

	<i>Ownership/operation</i>	
	<i>Domestic</i>	<i>Foreign</i>
a) Passenger terminal facilities	<input type="checkbox"/>	<input type="checkbox"/>
b) Cargo terminal facilities	<input type="checkbox"/>	<input type="checkbox"/>
c) Ground handling	<input type="checkbox"/>	<input type="checkbox"/>
d) Air traffic control (including communications)	<input type="checkbox"/>	<input type="checkbox"/>
e) Security services	<input type="checkbox"/>	<input type="checkbox"/>
f) Other (please specify)	<input type="checkbox"/>	<input type="checkbox"/>

### **CAPACITY MANAGEMENT**

- 1.4 Where lack of capacity is being experienced, indicate where there are in effect or are plans to introduce any of the following measures to address capacity problems:

	<i>Measures</i>	
	<i>In effect</i>	<i>Planned</i>
a) Increase capacity (runway/taxiway and/or terminal expansions)	<input type="checkbox"/>	<input type="checkbox"/>
b) Assigning certain traffic (on basis of e.g. aircraft size or origin/destination) to another airport	<input type="checkbox"/>	<input type="checkbox"/>
c) Slot allocations	<input type="checkbox"/>	<input type="checkbox"/>
d) Peak charges	<input type="checkbox"/>	<input type="checkbox"/>
e) High minimum charges	<input type="checkbox"/>	<input type="checkbox"/>
f) Other (please specify)	<input type="checkbox"/>	<input type="checkbox"/>

**FINANCING**

1.5 Indicate the primary source(s) that are currently applied or are planned for financing airport infrastructure investment requirements (indicate maximum of four sources):

	<i>Source</i>	
	<i>Applied</i>	<i>Planned</i>
a) Self-financing (e.g. retained earnings)	<input type="checkbox"/>	<input type="checkbox"/>
b) National government	<input type="checkbox"/>	<input type="checkbox"/>
c) Regional/municipal government	<input type="checkbox"/>	<input type="checkbox"/>
d) Foreign government loans or aid	<input type="checkbox"/>	<input type="checkbox"/>
e) Development banks or funds	<input type="checkbox"/>	<input type="checkbox"/>
f) Commercial loans - domestic	<input type="checkbox"/>	<input type="checkbox"/>
g) Commercial loans - foreign	<input type="checkbox"/>	<input type="checkbox"/>
h) Bonds	<input type="checkbox"/>	<input type="checkbox"/>
i) Share capital	<input type="checkbox"/>	<input type="checkbox"/>
j) Other (please specify)	<input type="checkbox"/>	<input type="checkbox"/>

**FINANCIAL DATA**

*Note.— Responses to the following four questions need not be provided if ICAO Air Transport Reporting Form J — Airport Financial Data for 1998 has already been filed with ICAO.*

Airport(s): \_\_\_\_\_

Year: \_\_\_\_\_ Currency: \_\_\_\_\_

1.6 **Income**

a) Air traffic operations (aircraft-related, passenger-related and other charges)	_____
b) Ground handling charges	_____
c) Concessions	_____
— of which fuel and oil	_____
— of which duty-free shops	_____
— of which automobile parking	_____
d) Rentals	_____
e) Other revenues	_____
f) Operating subsidies (if any)	_____
g) Total income (sum of above)	=====

**1.7 Expenses**

- |  |       |
|--|-------|
| a) Operation and maintenance (personnel costs, supplies, services contracted)      | _____ |
| b) Administrative overheads  | _____ |
| c) Other non-capital costs   | _____ |
| d) Capital costs (depreciation and/or amortization, interest, other capital costs) | _____ |
| e) Total expenses (sum of above)   | ===== |

**1.8 Capital investments**

Gross capital investments during the year \_\_\_\_\_

- 1.9 Indicate whether all or nearly all the expenses associated with the airport areas or services listed below are included in the expense data reported in question 1.7 above.

	<i>All or nearly all expenses included</i>	
	Yes	No
a) Aircraft movement areas and their associated lighting	<input type="checkbox"/>	<input type="checkbox"/>
b) Passenger and cargo terminal facilities	<input type="checkbox"/>	<input type="checkbox"/>
c) Hangar and maintenance areas	<input type="checkbox"/>	<input type="checkbox"/>
d) Approach and aerodrome control (including communications)	<input type="checkbox"/>	<input type="checkbox"/>
e) Meteorological services	<input type="checkbox"/>	<input type="checkbox"/>
f) Security	<input type="checkbox"/>	<input type="checkbox"/>
g) Crash, firefighting and rescue services	<input type="checkbox"/>	<input type="checkbox"/>

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## PART 2 — AIR NAVIGATION SERVICES

**FIR(s)/UIR(s) (Flight information region(s)/ upper flight information region(s))covered:** \_\_\_\_\_

### ORGANIZATION

2.1 Indicate below the overall structure of ownership and operation under which air traffic services (ATS) en route (area control) are provided currently and as planned:

		<i>Structure</i>	
		<i>Current</i>	<i>Planned</i>
a)	Government owned autonomous entity	<input type="checkbox"/>	<input type="checkbox"/>
b)	Directorate of civil aviation	<input type="checkbox"/>	<input type="checkbox"/>
c)	Ministry or other national government department	<input type="checkbox"/>	<input type="checkbox"/>
d)	International operating agency	<input type="checkbox"/>	<input type="checkbox"/>
e)	Privately-owned entity	<input type="checkbox"/>	<input type="checkbox"/>
f)	Other (please specify )	<input type="checkbox"/>	<input type="checkbox"/>

2.2 Indicate whether approach and aerodrome control services, including communications, are currently provided by:

		<i>Yes</i>	<i>No</i>
a)	The airport administration itself	<input type="checkbox"/>	<input type="checkbox"/>
b)	The organization providing ATS en route	<input type="checkbox"/>	<input type="checkbox"/>
c)	Other (please specify )	<input type="checkbox"/>	<input type="checkbox"/>

2.3 Indicate whether the provider of ATS referred to in question 2.1 is also the principal provider of the following services:

		<i>Yes</i>	<i>No</i>
a)	COM (Aeronautical telecommunication services)	<input type="checkbox"/>	<input type="checkbox"/>
b)	MET (Meteorological services)	<input type="checkbox"/>	<input type="checkbox"/>
c)	SAR (Search and rescue services)	<input type="checkbox"/>	<input type="checkbox"/>
d)	AIS (Aeronautical information services)	<input type="checkbox"/>	<input type="checkbox"/>

**COLLECTION OF AIR NAVIGATION SERVICES CHARGES**

2.4 Indicate whether the body levying air navigation services charges collects them itself, or has contracted with another body/agency to perform the collection:

	Yes	No
a) Collects itself	<input type="checkbox"/>	<input type="checkbox"/>
b) Collected by another body/agency	<input type="checkbox"/>	<input type="checkbox"/>
c) If response to b) is "Yes", name of body/agency: _____	<input type="checkbox"/>	<input type="checkbox"/>

**CAPACITY MANAGEMENT**

2.5 Where lack of capacity is being experienced in the airspace for which your State has accepted the responsibility for providing air navigation services, indicate whether there are in effect or there are plans to introduce any of the following measures to address capacity problems:

	<i>Measures</i>	
	<i>In effect</i>	<i>Planned</i>
a) At the approach and aerodrome control level:		
1) Increase capacity (e.g. additional staff, facilities)	<input type="checkbox"/>	<input type="checkbox"/>
2) Slot allocations	<input type="checkbox"/>	<input type="checkbox"/>
3) Peak charges	<input type="checkbox"/>	<input type="checkbox"/>
4) High minimum charges	<input type="checkbox"/>	<input type="checkbox"/>
5) Other (please specify)	<input type="checkbox"/>	<input type="checkbox"/>
b) At the en route level:		
— National measures	<input type="checkbox"/>	<input type="checkbox"/>
1) Increase capacity (e.g. additional staff, facilities)	<input type="checkbox"/>	<input type="checkbox"/>
2) Slot allocations	<input type="checkbox"/>	<input type="checkbox"/>
3) Charging mechanisms	<input type="checkbox"/>	<input type="checkbox"/>
4) Other (please specify )	<input type="checkbox"/>	<input type="checkbox"/>
— International measures (please specify)	<input type="checkbox"/>	<input type="checkbox"/>

**FINANCING**

2.6 Indicate below the primary source(s) that are currently applied or planned for financing air navigation services infrastructure investment requirements(indicate maximum four sources):

	<i>Source</i>	
	<i>Applied</i>	<i>Planned</i>
a) Self financing (e.g. retained earnings)	<input type="checkbox"/>	<input type="checkbox"/>
b) National government	<input type="checkbox"/>	<input type="checkbox"/>
c) Foreign government loans or aid	<input type="checkbox"/>	<input type="checkbox"/>
d) Development banks or funds	<input type="checkbox"/>	<input type="checkbox"/>
e) Commercial loans - domestic	<input type="checkbox"/>	<input type="checkbox"/>
f) Commercial loans - foreign	<input type="checkbox"/>	<input type="checkbox"/>
g) Share capital	<input type="checkbox"/>	<input type="checkbox"/>
h) Other (please specify)	<input type="checkbox"/>	<input type="checkbox"/>

**FINANCIAL AND TRAFFIC DATA**

*Note.— Response to the following four questions need not be provided if ICAO Air Transport Reporting Forms K — En Route Facility Financial Data and L — En Route Facility Traffic Data for 1998 have already been filed with ICAO.*

**FIR(s)/UIR(s) (Flight information region(s)/ upper flight information region(s))covered:** \_\_\_\_\_

Year: \_\_\_\_\_ Currency: \_\_\_\_\_

**2.7 Income**

a) Route facility charges	_____
b) Approach and aerodrome control charges	_____
c) Grants and subsidies allocable to route facilities	_____
d) Other revenues allocable to route facilities (including profits on assets sold)	_____
e) Total income (sum of above)	<u>          </u>

**2.8 Expenses**

- |  |       |
|--|-------|
| a) Operation and maintenance (e.g. labour, spares, materials, power, etc.) | _____ |
| b) Administrative overheads  | _____ |
| c) Depreciation and/or amortization  | _____ |
| d) Interest  | _____ |
| e) Other expenses  | _____ |
| f) Total expenses (sum of above)   | ===== |

2.9 Indicate the estimated share (percentage or absolute figure) of the total expenses accounted for by the following major facilities and services:

- |  |       |
|--|-------|
| a) ATS (Air traffic services)                    | _____ |
| b) COM (Aeronautical telecommunication services) | _____ |
| c) MET (Meteorological services)                 | _____ |
| d) SAR (Search and rescue services)              | _____ |
| e) AIS (Aeronautical information services)       | _____ |

**Traffic Data**

**FIR(s)/UIR(s) (Flight information region(s)/ upper flight information region(s))covered:** \_\_\_\_\_

Year ended: \_\_\_\_\_

2.10 Provide below, by category, the number of IFR (Instrument Flight Rules) flights or other flights for which flight plans were filed with the respective area control centre(s) or flight information centre(s):

- |   |       |
|---|-------|
| a) International civil flights (including international general aviation) | _____ |
| b) Domestic civil flights (including general aviation)                    | _____ |
| c) Other flights (State, including military flights)                      | _____ |
| d) Total flights (sum of above)   | ===== |

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**PART 3 — REGULATORY ASPECTS**

3.1 Indicate whether charges on air traffic (e.g. landing charges, parking charges, passenger service charges, route charges, and approach and aerodrome control charges) are determined by (check one box in each column only):

	<i>Airport charges</i>	<i>Air navigation services charges</i>
a) Airport/air navigation services provider independently	<input type="checkbox"/>	<input type="checkbox"/>
b) Airport/air navigation services provider with government approval	<input type="checkbox"/>	<input type="checkbox"/>
c) Government	<input type="checkbox"/>	<input type="checkbox"/>

3.2 Indicate the main determinants applied in setting airport/air navigation services charges:

	<i>Airport charges</i>	<i>Air navigation services charges</i>
a) Charges are cost-based	<input type="checkbox"/>	<input type="checkbox"/>
b) Transparent accounting system clearly identifying sources of income and categories of expenses	<input type="checkbox"/>	<input type="checkbox"/>
c) Mandatory consultation with users	<input type="checkbox"/>	<input type="checkbox"/>
d) ICAO cost recovery policy	<input type="checkbox"/>	<input type="checkbox"/>
e) Intergovernmental factors (e.g. obligations emanating from bilateral air services agreements; regional regulatory policy agreements)	<input type="checkbox"/>	<input type="checkbox"/>
f) Other (please specify )	<input type="checkbox"/>	<input type="checkbox"/>

3.3 Indicate if your government has or plans specific regulatory provisions with regard to:

	<i>Airports</i>		<i>Air navigation services</i>	
	<i>In effect</i>	<i>Planned</i>	<i>In effect</i>	<i>Planned</i>
Abuse of monopoly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ground handling arrangements (airports only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you have checked one or more boxes under this question, provide below or attach brief details of the provisions.

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## **ICAO PUBLICATIONS IN THE AIR TRANSPORT FIELD**

The following summary gives the status and also describes in general terms the contents of the various series of publications in the air transport field issued by the International Civil Aviation Organization:

**International Standards and Recommended Practices on Facilitation** (*designated as Annex 9 to the Convention*) which are adopted by the Council in accordance with Articles 37, 54 and 90 of the Convention on International Civil Aviation. The uniform observance of the specifications contained in the International Standards on Facilitation is recognized as practicable and as necessary to facilitate and improve some aspect of international air navigation, while the observance of any specification contained in the Recommended Practices is recognized as generally practicable and as highly desirable to facilitate and improve some aspect of international air navigation. Any differences between the national regulations and practices of a State and those established by an International Standard must be notified to the Council in accordance with Article 38 of the Convention. The Council has also invited Contracting States to notify differences from the provisions of the Recommended Practices;

**Council Statements** on policy relating to air transport questions, such as charges for airports and air navigation services, taxation and aims in the field of facilitation;

**Digests of Statistics** which are issued on a regular basis, presenting the statistical information received from Contracting States on their civil aviation activities;

**Circulars** providing specialized information of interest to Contracting States. They include studies on trends in the air transport industry at a global and regional level and specialized studies of a worldwide nature;

**Manuals** providing information or guidance to Contracting States on such questions as airport and air navigation facility tariffs, air traffic forecasting techniques and air transport statistics.

Also of interest to Contracting States are reports of meetings in the air transport field, such as sessions of the Facilitation Division and the Statistics Division and conferences on the economics of airports and air navigation facilities. Supplements to these reports are issued, indicating the action taken by the Council on the meeting recommendations, many of which are addressed to Contracting States.

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