

## Measure 26: Airport capacity expansion

### First page:

*Policy package:*

**3C: Air transport investment and technology**

*Measure 26:*

Airport capacity expansion

*What is the problem being addressed ?*

The TEN-T network in the enlarged European Union as defined in the 1996 Guidelines and based on the TINA study contains 379 airports, whereas 335 are located in the Member States and 44 in the Candidate Countries as shown in the table below taken from the DG TREN-PLANCO Study on TEN-T infrastructure:

<b>Airport Type</b>	<b>Member States</b>	<b>Candidate Countries</b>	<b>Total</b>
International	46	17	<b>63</b>
Community connection points	78	24	<b>102</b>
Regional	211	3	<b>214</b>
<b>Total</b>	<b>335</b>	<b>44</b>	<b>379</b>

Source: DG TREN-PLANCO "TEN-Invest" Study, 2003

Air transport has seen almost uninterrupted growth over the last 50 years. One solution is to provide more infrastructure and thus "build to facilitate the demand", because of the economic benefits associated with increased accessibility. The infrastructure provision to accommodate demand on the ground is difficult as finding suitable plans for additional airport capacity presents very important difficulties. The timescale for planning and building new runway and terminal capacity is long, and delays due to new environmental and sustainable concerns are frequent. Growth contributes to congestion and is also influenced by environmental restrictions. As is the case for any other transportation system, airports play a significant role in the local, regional or national transport policy. Consequently, the Airport authority is not the only organisation involved in the development policy of its airport. This implies a long process and delays for building new terminals or runways. A new terminal can take more than 5 years (e.g. Terminal 5 London Heathrow), a new runway between 5 to 10 years (e.g. 5th runway Amsterdam Schiphol) and a new airport needs more than 20 years to built (e.g. the new Munich Airport). For these reasons, the creation of new airports or existing airport expansion programmes within Europe is already well known for the next 20 years. At this regard, the DGTREN-PLANCO Study on TEN-T infrastructure has provided the following overviews of investment in TEN-T airports, in the EU15 and Candidate Countries:

Table 6-19: Investments in TEN-T airports, Member States, million Euro

Country	1996/1997	1998/1999	2000/2001	2002/2003	2004/2005	2006/2010	TOTAL
Austria	158.1	132.7	137.5	270.7	214.5	330.8	1,244.3
Belgium	52.9	425.5	514.0	247.8	152.3	223.2	1,615.7
Denmark	265.9	143.4	49.5	16.7	4.2	1.9	481.6
Finland	88.3	145.8	83.1	16.7	0.4	1.1	345.5
France	1,036.9	1,475.6	663.1	1,223.3	1,105.5	489.8	5,994.2
Germany	1,754.2	2,189.2	1,332.6	0.0	0.0	0.0	5,276.0
Greece	462.5	899.0	1,005.1	429.3	311.3	180.9	3,298.1
Ireland	87.5	99.0	187.1	0.1	0.0	0.0	383.7
Italy	998.5	428.3	486.6	197.8	24.0	0.0	2,135.2
Luxembourg	42.9	42.9	46.4	50.0	50.0	125.0	357.1
Netherlands	2,209.1	2,371.3	21.3	71.1	44.2	0.0	4,716.9
Portugal	240.2	84.6	372.4	195.4	7.2	0.0	909.8
Spain	405.6	200.5	332.8	2,193.5	2,033.0	2,400.3	7,565.8
Sweden	42.1	172.7	27.8	29.8	279.7	761.8	1,313.9
United Kingdom	28.5	97.3	229.8	2,961.8	3,843.4	8,774.7	15,935.4
Total	7,893.1	8,917.7	5,489.3	7,904.0	8,069.7	13,299.6	51,573.3

Table 6-22: Investments in TEN-T airports, Candidate Countries, million Euro

Country	1996/1997	1998/1999	2000/2001	2002/2003	2004/2005	2006/2010	2011/2015	TOTAL
Bulgaria	25.7	51.3	51.3	51.3	25.7	0.0	0.0	205.4
Cyprus	0.0	40.2	80.5	80.5	80.5	32.4	0.0	314.0
Czech Republic	0.0	0.4	28.1	28.1	28.1	69.4	0.0	154.1
Estonia	1.1	19.5	7.7	0.2	0.4	0.9	0.0	29.9
Hungary	0.0	0.0	0.7	4.8	1.8	5.3	0.0	12.6
Latvia	0.0	12.4	12.4	6.2	0.0	0.0	0.0	31.0
Lithuania	0.0	12.4	0.5	18.3	18.3	45.7	0.0	95.0
Malta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Poland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Romania	42.7	71.3	33.6	48.7	87.3	195.8	192.6	672.0
Slovakia	0.0	0.0	4.4	4.4	0.0	0.0	0.0	8.7
Slovenia	5.3	5.3	5.6	6.1	9.6	1.7	0.0	33.7
Total	74.7	212.9	224.8	248.7	251.6	351.2	192.6	1,556.4

#### Measure's costs and/or benefits:

Airport capacity expansion is facilitated by the Community through financial support provided by TEN-T programmes and in the case of economically disadvantaged regions the ERDF (objective 1 regions) and the Cohesion fund. However, airports are historically one of the transport modes with the lowest TEN-T allocations. As it concerns in particular the share of airport in the TEN-T Community budget distribution, this is only taking 4% of the funds available, as it may be noted by the table included in Measure 45 of this report.

#### Legislative implementation at the EU level:

Since the beginning of last year the Commission had been planned to launch a stakeholder consultation on all matters related to Community airports. Due to the economic uncertainties to the aviation sector caused by the war in Iraq from March 2003 onwards it was then decided to postpone the launch of this consultation at a later stage when the representatives of stakeholders would have sufficient capacity to react to the Commission comprehensive paper.

#### What are the objectives ?

Airport capacity is affected by many factors such as safety, security, environmental objectives as well as ATM management. The number of movements per hour (arrivals or departures), as stated in the airside capacity, is commonly based on runway capacity, but airport operational capacity depends also on the ability to handle aircraft while they are still on the ground. The declared capacity of an airport must take into account additional parameters to guarantee a seamless treatment of the aircraft during its turn-around time and to avoid disruptions, which are a source of delay.

Terminal passenger capacity and the availability of facilities to handle both arrival and departure flows, is one of the main elements affecting landside capacity. Check-in counters and boarding gates, time and distance to the gates, shops and restaurants layout, security filtering queues, all have an impact on the departure flow capacity. Baggage delivery, police and customs facilities are the main elements affecting passenger arrival flows. For a complex airport, the overall capacity provided, expressed as the maximum number of aircraft it could accept at a given time, depends (at least locally in the process of defining the capacity) on the airport layout (number of runways, number of terminals, specificity of the terminals, stand diversity, service providers constraints), aircraft mix, technological equipment and is affected by the weakest element.

The need to manage aircraft turnaround time efficiently has further increased with new airline policies. Hub and spoke management is based on very accurate times of disembarking and re-embarking passengers. At most of important European airports, an important number of passengers are on connecting flights. It is the same for shuttle organisations where arriving aircraft are immediately re-used to fly back to the airport of origin. In the case of a hub and spoke policy involving airline alliances at one airport, the need to take into account connecting flights is even extended to more than one airline. For this reason, rotation or turnaround time, or the time that an aircraft spends on the ground, is a key performance indicator to be

used by an airport in determining its efficiency or attractiveness in managing aircraft operations and optimising capacity.

So, the real goal of an airport is to provide facilities on both airside and landside to achieve a minimum connecting time in accordance with airlines' needs. The minimum connecting time becomes one of the key parameters for the air transport industry. It is more and more agreed that a connecting time of around half an hour must be possible for short haul or medium haul flights, and 45 minutes for long haul flights. This implies a strong coordination of many activities and partners both on the landside and airside.

*Interactions with other WP measures:*

The long run issues of optimising investments (new infrastructure) with short term measures to optimise airport efficiency as slot allocation (Measure 21) and airport charges (Measure 20) over time are really difficult to study because some additional complexities appear as a natural consequence of the strong links between the different instruments. However, it is clear that new infrastructure would change the existing pressure on slot allocation because the ratio between demand met and demand not met would become smaller.

## Second page:

### *Output indicators:*

Suitable output indicators can be identified in relation to new proposals of the Commission. However, it is possible to envisage the use of output indicators to measure the direct effects of airport capacity expansion. Most typical indicators will include:

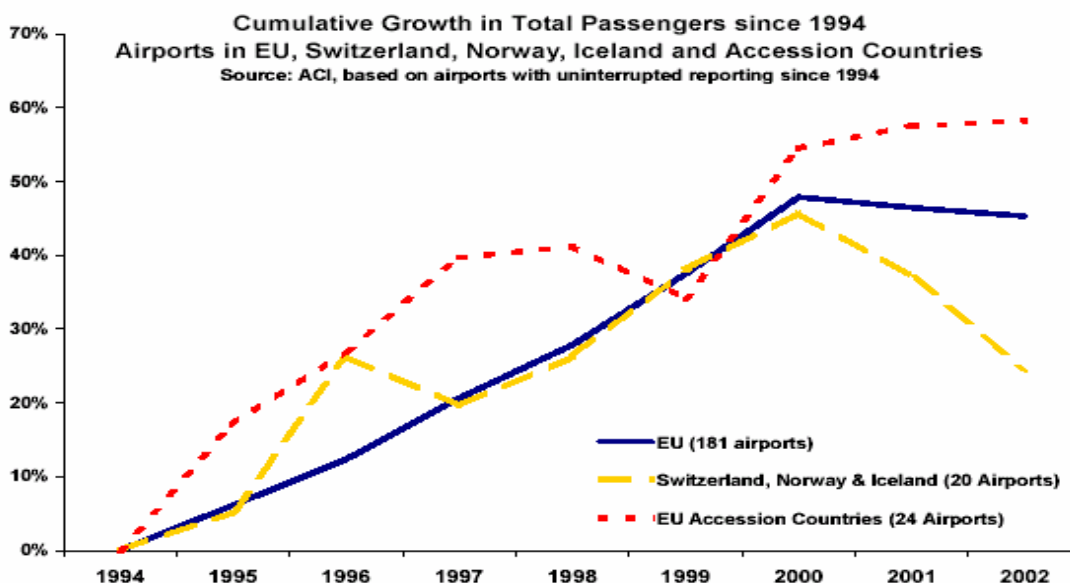
- Runways capacity;
- Maximum number of air traffic movements (departures or arrivals) per hour: this depends not only runways capacity, but also by other related factors, such as the number of gates and stands, their layout, contact piers versus remote stands, gate and apron management systems and refuelling and catering activities;
- Terminal passenger capacity, which depend on the availability of facilities to handle both arrival and departure flows: the loading rates of airports in different regions of the world show that it is around 200 passenger per aircraft for Japan's airports, more than 100 for European's airport and around 90 for US ones.
- Number of passengers on connecting flights and minimum connecting time: it is more and more agreed that a connecting time of around half an hour must be possible for short haul and medium haul flights, and 45 minutes for long haul flights.

An useful source of data is the database developed under the DG TREN-PLANCO Study on TEN-T network infrastructure which include the following data for the TEN-T airports: total capacity, the number and length of the runways and the operating hours; operational statistics covering freight and passengers.

### *Outcome indicators: intermediate impacts on transport markets*

Suitable market indicators can be only identified when the characteristics of the new airport efficiency and capacity policy of the Commission will be known, whenever the stakeholder consultation process mentioned above will be launched. However, a general market indicator that will be affected by increasing capacity of Community airport is obviously the air traffic throughput at expanded airports (both passengers and cargo):

- Passenger traffic from Europe's airports had grown fairly steadily through the latter half of the 1990s before declining in 2001 and 2002:



- The table below shows the uneven distribution of passenger transport demand per capita by air in the year 1999:

### Passenger transport demand per capita by air in 1999

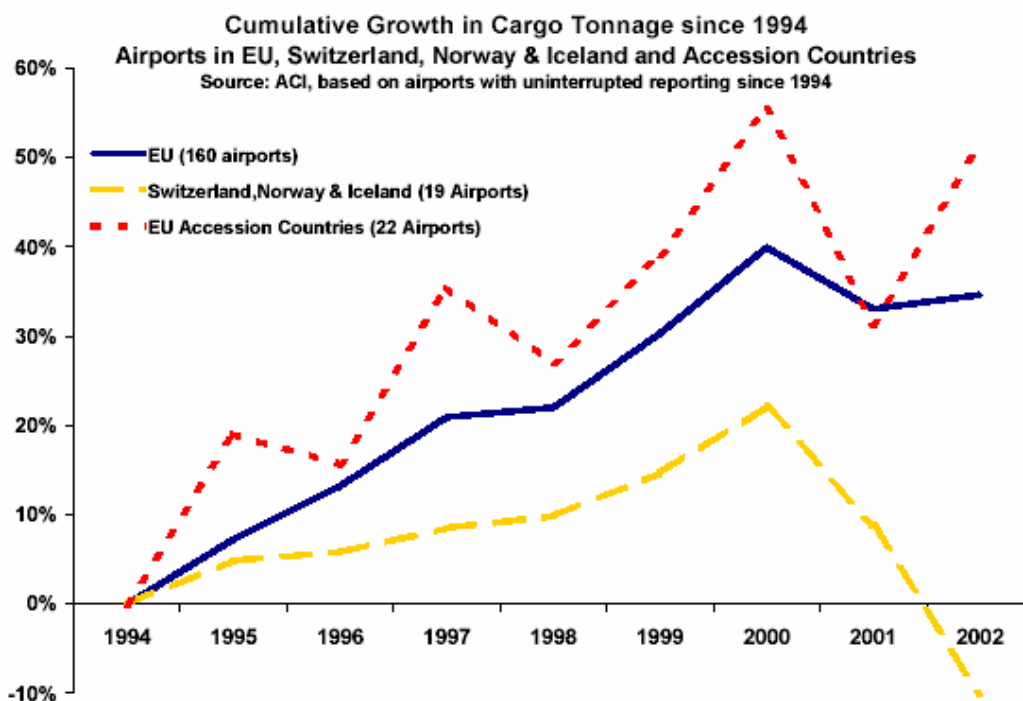
Unit: passenger-kilometres per person

	Domestic	Intra-European	Extra-European
Austria	0	290	684
Belgium	–	639	1 096
Denmark	246	471	423
Finland	233	658	609
France	156	159	1 104
Germany	69	204	777
Greece	102	309	380
Ireland	19	724	1 258
Italy	122	126	388
Luxembourg	–	1 380	465
Netherlands	–	471	3 207
Portugal	124	350	463
Spain	291	201	505
Sweden	367	702	629
United Kingdom	82	317	1 642
<b>EU-15</b>	<b>123</b>	<b>262</b>	<b>960</b>

Source: Eurostat, 2002.

The highest per capita demand for air passenger transport in 1999 was in the Netherlands and the United Kingdom, mainly because of the high competitiveness of Schiphol Airport and London Heathrow serving inter-continental flights, which account for 87 and 80% of the per capita demand respectively. However, this international air transport demand cannot be solely attributed to the UK and the Netherlands, as much of this transport activity is related to the transfer of passengers.

- Growth in cargo tonnage at EU airports has been fairly steady, averaging 4% since 1994. However, volume fell sharply in 2001 before undergoing a limited recovery in 2002.



The contribution of airport capacity investments to achieving the objective of modal shift away from road transport should be also assessed.

*Outcome indicators: final impacts on transport users and non users*

The same consideration as for market indicators applies for the outcome indicators, that is they can be more precisely defined when the policy will be better defined. However, it is clear that the expansion of capacity should:

- Reduce congestion at airports, at least in the short-medium term, until the volume of traffic approaches again capacity limits. The ratio between demand met and demand not met at congested airports can be of help here to measure this effect; another indicator could be the reduction of airport related delays as monitored by EUROCONTROL.
- Lead to appearance of reliever and specialised airports for cargo, charter, low cost carriers etc. at capacity bottlenecks of the system to absorb extra demand.
- Improvement of the relationship between accommodated and unaccommodated demand in Europe as twice studied by EUROCONTROL (Constraints to growth Study 2002 and Challenges to grow study 2004 by EUROCONTROL).
- Increase of number of slots available at coordinated and fully coordinated airports as a result of local measures to increase slot capacity and regular review and adjustment of the slot reference point (IATA Worldwide scheduling process)
- As a consequence, reduce air pollutants emissions per aircraft arrival or departure, while total emissions will continue to increase following the expected growth of aircraft movements. However, it is clear that expanding airport capacity to accommodate growth in air transport demand will enable the climate change impact from aircraft to increase. Another important impact will concern noise, because expanding capacity may affect the number of people affected by aircraft noise. Therefore, apart from emission of air pollutants, the impacts on the global climate change and on the exposure to noise of population should be also amongst the indicators assessed.
- Produce employment benefits: these include direct employment required in the new infrastructure building and then in the expanded airports operations, and the indirect impacts on the regional economy. Concerning the latter, empirical evidence would suggest that international traffic through an airport plays an important role in attracting and maintaining “new economy” employment, part of which is often concentrated in new premises in the vicinity of the larger airports.