

VALORISATION OF AIR TRANSPORT INFRASTRUCTURE IN SOUTH EAST EUROPE

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ABSTRACT

The European Union and the countries of South East European region signed an ECAA agreement to provide a framework for the development of air services between European Union and South East Europe. Development of air transport infrastructure of South East Europe is prominent segment of connecting countries within the region and integration of the region itself in becoming one of the economic centres of Europe. Memorandum of Understanding, signed in year 2004 among regional participants from South East Europe, defines the basis for development of Core Network of South East Europe as a part of which eleven Core Network airports were defined. After additional analysis of other six South East European international airports, which weren't originally part of Core Network, on the basis of their traffic volumes and regional importance, in year 2009 they became a part of Core Network. The geographical location of South East European airports, positioned close to national borders, and considerably small size of national markets implicates importance of airport integration in transport multimodal network. This paper considers the levels of achievements in traffic results of airports of the South East Europe including organisational and infrastructure analysis of seventeen Core Network airports. The paper also reviews the status of air transport sector in South East Europe in the context of intraregional air transport integration as well as integration in European air transport network.

Keywords: Airport, Air Transport Infrastructure, Core Network, South East Europe

1 INTRODUCTION

The break-up of Yugoslavia and associated confrontations caused geopolitical and economic changes in the region which influenced the reduction of air transport sector in South East Europe (further referred to as SEE) to a shadow of its former self. Overall traffic carried on the SEE territory by regional airlines in year 2001 represents approximately 50 percent of passenger kilometre (PKM) carried by Yugoslavian JAT in 1989 [1].

The creation of autonomies countries led to the creation of new national flag carriers. In year 2010 cumulative traffic volume of SEE airlines¹ was three times lower than neighbouring Austrian Airlines traffic volume which reflects enormous change considering a pre war period (1989) when Yugoslavian JAT alone carried double passengers than Austrian Airlines. Comparing the CN airport performance in pre and post war period, only 3 CN airports in year 2001 traverse the traffic figures from year 1987 [2].

In recent years European airports have faced capacity crunch problems and despite 41 percent of capacity increase (5 new airports and 79 new runways) 11 percent of demand is

¹ JAT, Montenegro Airlines, Adria Airways, Croatia Airlines, Air Bosna, Air Srpska, Albanian Airlines

still not accommodated [3]. This is the segment in which future role of airports in South East European region, still partly underdeveloped and with its potentials insufficiently exploited, is recognised.

Accordingly, South East European Transport Observatory's (SEETO) role is recognised in the process of upgrading the existing infrastructure to the European Union countries level. Setting up the Core Network in year 2004 among other transport modes included eleven Core Network (further referred to as CN) airports as a part of air transport infrastructure.

Considering its traffic performance and regional importance in 2009, additional six international airports became a part of Core Network. Regarding regional importance of retrospectively introduced six Core Network airports and recent changes in airport organisational structures and infrastructural developments, additional detailed analysis on airport infrastructure in South East Europe was perceived.

2 STATE OF THE AIR TRANSPORT INDUSTRY IN SOUTH EAST EUROPE

Today, SEE region, concerning air transport, is a modest, undeveloped region, which represents only 1.3 percent of passenger transportation in the world schedule traffic and 1 percent of the number of international airports in the world [1].

Intercontinental transport was very significant in JAT's operations in year 1989 and today apart from middle range routes to Middle East and North Africa, does not exist from the CN airports.

The densest routes are international, mainly to and from European Union, due to relatively small SEE countries areas which implicate lack of domestic traffic with exceptions in Croatia and partially Serbia. That fact highlights the importance of cross border international traffic on regional and European level.

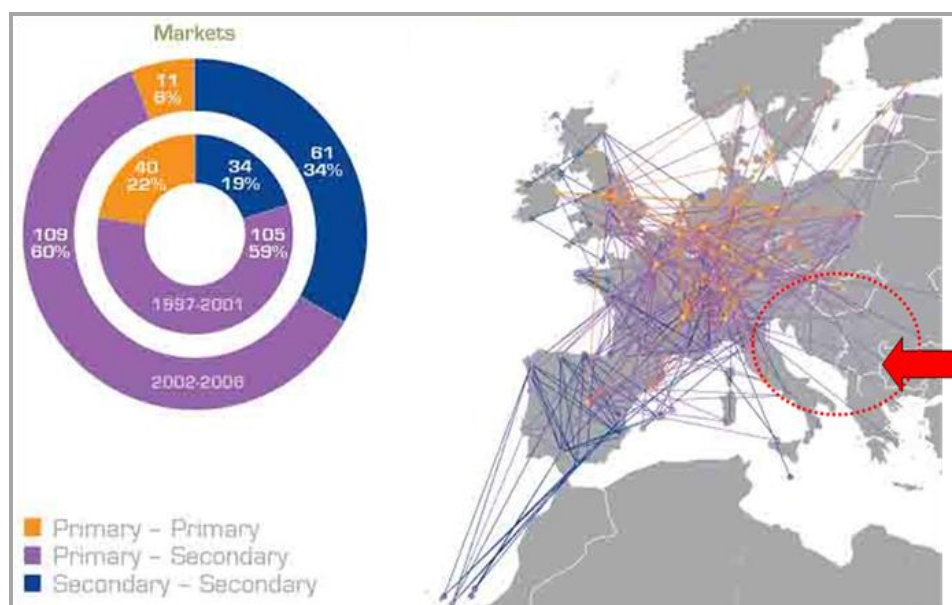


Figure 1: Segmentation of air transport routes in Europe [4]

After signing the ECAA agreement liberalisation of air service occurred and the route network has grown rapidly. New established routes are connecting European destinations with SEE region serving neighbouring hub airports as feeders while main regional airport which could compare to European hubs has not yet been established.

Main airports offering connecting flights are Belgrade and Zagreb although with 2.7 and 2.1 million passengers in 2010 remain small in comparison to European standards.

Apart of the recent global economical crisis that affected almost everybody in the world, the economical progress achieved in the region in last ten to fifteen years is significant. After war boosted economy has tackled people to travel by both business and leisure reasons and such situation has created various new trip generators.

Tourism development positively affected on economical situation in South East Europe countries and is taking more and more important role in stimulating air transport in the region.

Concerning airline industry, recent economic crisis caused global airline industry net loss of 11 billion Euros in 2008 and 4 billion Euros in 2009. Drop of passenger carried and particularly the cargo traffic (minus 13 percent), witnessed the drop in demand during the year 2009 as a result of heavy turbulences on the global market.

Airlines in South East Europe are not doing any better where Croatia Airlines recorded 13.7 million Euros loss in 2009. Even though BH airlines had 11.9 percent increase of passengers' number in 2009 due to load factor, hefty decrease losses were recorded.

Montenegro Airlines flew 527,000 passengers in 2009, up to 4.6 percent from the year earlier, but even though financial loss of 3 million Euros remained.

Macedonian Airlines MAT is no longer flying and Kosovo Airlines does not exist anymore [5].

Table 1: Indicators of air transport in South East Europe (2009)

Country	Passengers (000)			Cargo (kg)	CN Airports	Airlines
	International	Domestic	Total			
Albania	1,394,688	-	1,394,688	1,863,265	1	3
Bosnia and Herzegovina	532,867	221	533,915	1,923,936	2	2
Croatia	4,000,413	933,488	4,968,381	11,872,722	7	4
FYR Macedonia	634,591	-	634,591	2,125,462	2	1
Montenegro	982,656	-	982,656	1,482,512	2	1
Serbia	2,401,185	51	2,401,236	7,080,645	2	3
Kosovo (UNSCR 1244/99)	1,191,978	-	1,191,978	1,301,974	1	-
Total	11,138,378	933,760	12,107,445	27,650,516	17	14

3 ANALYSIS OF AIR TRANSPORT INFRASTRUCTURE IN SOUTH EAST EUROPE

In last decade South East Europe region recorded significant growth in airport traffic volumes, in some South East Europe countries exciding even 10 percent, as well as constant changes in traffic volume figures varying from minus 49 percent in Former Yugoslav Republic of Macedonia (2001) to 109.24 percent in Kosovo under UNSCR 1244/99 (2002).

Such developments in traffic volumes are partly caused by the Low Cost Carriers' entrance on South East Europe market in 2003, which is visible in traffic increase from 5.7 million in 2002 to 8 million in 2004. In last decade (2000-2009) annual growth rate of passenger traffic volumes was 7.3 percent and in cargo 48.14 percent.

Table 2: CN Airports passenger traffic growth by regional participants (%) [6]

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Albania	N/A	N/A	N/A	N/A	N/A	15.43	22.04	14.58	10.07	-13.87	9.65
Bosnia and Herzegovina	-9.97	-4.18	17.61	9.63	8.41	5.17	9.03	2.75	4.61	-3.01	4.00
Croatia	6.97	6.40	42.12	12.51	18.77	12.22	11.57	5.49	-5.72	-2.53	10.78
FYR Macedonia	-49.43	3.52	-4.07	-3.34	9.14	3.03	13.34	3.72	-8.69	-8.44	-4.12
Montenegro	N/A	N/A	N/A	9.77	4.90	15.59	24.11	7.26	-11.42	15.40	9.94
Serbia	16.95	8.30	14.13	11.52	-0.25	2.57	20.42	5.09	-10.16	8.14	7.67
Kosovo (UNSCR 1244/99)	1.69	109.24	-1.07	9.07	2.15	-5.12	12.18	14.18	5.43	N/A	16.42

In spite of mentioned high air transport growth rates in the region the gap between the growing needs and demands of the travelling public, existing transport facilities and offered possibilities and capacities is vast. Recent investments in some of CN airports upgraded the level of service and increased terminal capacity but on most CN airport further investments in infrastructure and equipment are needed.

3.1 Analysis of Second Category Core Network Airports Infrastructure

According to the TEN-T categorisation second category airports are referred as Community connecting points. The categorisation includes all airports or airport systems with an annual traffic volume of: [7]

- between 1,000,000 minus 10 percent and 4,499,999 passenger movements, or
- between 50,000 and 149,999 tonnes freight throughput, or
- between 500,000 and 899,999 passenger movements, of which at least 30 percent are non-national, or
- between 300,000 and 899,999 passenger movements and located off the European mainland at a distance of over 500 km from the nearest international connecting point.

Applying TEN-T categorisation on Core Network airports, it can be noted that ten airports based on their traffic performance (Tirana, Sarajevo, Zagreb, Dubrovnik, Split, Skopje, Podgorica, Tivat, Belgrade and Pristina) are in Second Category as Community connecting points.

Second category CN airports are equipped with one runway longer than 2,400 meters enabling operations of narrow and wide body jets such as B767-300 and A310-300, while airport Belgrade, Dubrovnik, Zagreb and Tivat runway systems are able to accept even wide body passenger aircrafts (B474-400, A380, A340-500).

Apart from runway, other airport capacity limitations in taxiway systems, apron, gates and passenger terminal areas are probable and even though second category airport runways are capable to accommodate largest passenger aircrafts limiting factors preclude its usage. In a view of airport expansion and modernisation, preliminary process focuses on identification of priority capacity limitation facilities.

Table 3: Second Category Core Network Airports infrastructure indicators

	Operational hours	IATA Level	No Runways	Runway lengths	No Pax Terminals	Pax Terminal Area (m ²)	Apron Area (m ²)
Tirana	24h	NA	1	2,750	1	13,000	55,500
Sarajevo	06:00 - 22:00	2	1	2,600	1	46,000	8,000
Dubrovnik	4:00 - 21:00	1	1	3,300	1	N/A	110,500
Split	06:00 -22:00	2	1	2,550	1	10,800	50,000
Zagreb	24h	1	1	3,252	1	15,000	168,000
Skopje	05:30 - 22:30	2	1	2,450	1	4,000	64,170
Podgorica	04:00 - 22:00	1	1	2,500	1	5,500	33,220
Tivat	07:00 – 16:00	1	1	3,252	1	4,050	40,000
Belgrade	05:00 - 23:00	1	1	3,400	2	51,000	163,350
Pristina	24h	NA	1	2,500	1	3,938	46,020

Recent decade was characterised with CN airports facilities expansions, modernisations and extensions. As a part of airports Belgrade development strategies in order to gain additional traffic volumes Terminal 2 was constructed in 2006. Today airport Belgrade is the only second category CN airport which operates on two passenger terminals comprising passenger terminal area of 51,000 m² and capacity of 5.6 million passengers annually.

Prior the airport Belgrade extension, modernisation and reconstruction of airports Sarajevo (2001), Tivat (2003) and Split (2005) were made. Airport Skopje is currently implementing the project which comprises the construction of a new 40,000 m² terminal building with 6 passenger boarding bridges. By the end of construction the new airport will be able to handle a capacity of 6 million passengers per year. Podgorica airport is second Montenegrin airport where reconstruction of terminal building in 2006 and construction of new administrative building in 2009 took place as a part of 30 million Euros worth project of Montenegrin airports modernisation and expansion supported by EIB² and EBRD³ [8]

Apart from terminal and runway facilities, existence of minimum navigation aids such as runway and taxiway lighting, precision approach path indicator (PAPI), VOR⁴, NDB⁵ or DME⁶ and ILS⁷ CAT⁸ I are a standard requirements for the airlines to start scheduled services from the airport. Airports Pristina and Sarajevo are subservient to bad weather conditions which reduce visibility for aircraft pilots and preclude scheduled air traffic. Most CN airports are equipped with minimum navigation aids and ILS CAT I what enables precision instrument approach and landing with a decision height not lower than 61 m above touchdown zone elevation and with either a visibility not less than 800 meters or a runway visual range not less than 550 meters. Airports Zagreb and Belgrade are equipped with precision instrument approach and landing system ILS CAT IIIb where decision height is lower than 15 meters above touchdown zone elevation, or no decision height and runway visual range less than 200 meters but no less than 75 meters.

² EIB – European Investment Bank

³ EBRD – European Bank for Reconstruction and Development

⁴ VOR - VHF Omni-directional Range

⁵ NDB - Non Directional Bacon

⁶ DME - Distance Measuring Equipment

⁷ ILS - Instrument Landing System

⁸ CAT - Category

3.2 Analysis of Third Category Core Network Airports Infrastructure

Third TEN-T airports categorisation defines airports as regional connecting points and accessibility points and includes all airports or airport systems with a total annual traffic volume:

- of between 500,000 and 899,999 passenger movements, of which less than 30 percent are non-national, or
- with an annual traffic volume of between 250,000 minus 10 percent and 499,999 passenger movements, or
- with an annual traffic volume of between 10,000 and 49,999 tonnes freight throughput.

Beside passenger and cargo volume requirements, additional criteria for airport inclusion was retrieved, such as location of airport on island or landlocked area of the Community with commercial services operated by aircraft with a maximum take-off weight in excess of 10 tonnes.

A definition of landlocked area includes radius of over 100 km from the nearest international or Community connecting point. Accordingly it is noted that seven CN airports are in third category of which only Pula and Zadar meet the traffic volume criteria while the rest meet location criteria.

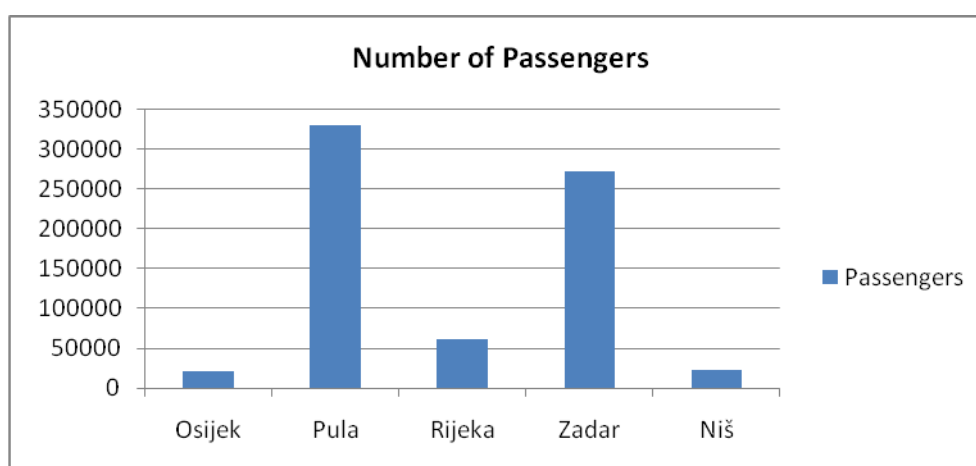


Figure 2: Passenger traffic volumes on Third Category CN airports [6]

As second category CN airports, third category airports runway systems were formally used in military services and therefore its average length is 2,500 meters. Lower level of third category airports importance for national governments is noted in relatively small amount of its recent reconstructions and developments.

Even though airport Pula has highest passenger traffic of third category airports, last airport expansion and modernisation was made in 1989 when new terminal building was constructed enabling the airport to cope with passengers throughput of one million passengers. Airport Osijek has the smallest passenger traffic of all third category CN airports and its further development is related to the potential cargo traffic growth for which the airport has cargo storage of 2,400 m². In third category Ohrid airport runway system, Zadar airport terminal building and Nis airport apron were recent reconstructed, expanded and modernised [9].

Table 4: Third Category Core Network Airports infrastructure indicators

	Operational hours	IATA Level	No. of Runways	Runway lengths	No. Pax Terminal	Pax Terminal Area (m ²)	Apron Area (m ²)
Banja Luka	NA	NA	1	2,400	1	800	21,600
Osijek	07:00-14:00	1	1	2,500	1	1,536	27,000
Rijeka	04:00-20:00	1	1	2,500	1	7,800	33,600
Pula	W8-16; S8-20	1	1	2,946	1	5,400	64,200
Zadar	06:00-22:00	1	2	2,500	2	4,044	32,420
Ohrid	NA	NA	1	2,550	1	2,500	38,700
Nis	Request 24h	1	1	2,500	1	2,000	27,500

4 FUTURE AIR TRANSPORT INFRASTRUCTURE DEVELOPMENTS IN SOUTH EAST EUROPE

Considering the valorisation of current airport infrastructure in South East Europe it is visible that future infrastructure developments are foreseen. The sector is characterised with concessions in which contracts for future 20 years and its infrastructure developments are defined. Some of airports like Tirana already finished contracted construction works and expansions and it doesn't have any huge developments on the way. Airport Podgorica was completely refurbished a few years back and today is able to accommodate one million passengers annually. Some of Core Network airports such as Airports Banja Luka, Pula, Osijek and Rijeka do not have in its short term development plans ambiguous expansions and constructions due to small traffic volumes and no potential for its increase in near future. Airports Belgrade with future investments of 118 million Euros, Zagreb with 270 million Euros and Pristina with 140 million Euros are contrariety and its development plans for expansions and modernisations will be shortly in the process. The management of Belgrade airport and the Government of Serbia plan to invest 118 million Euros into the expansion of the terminal building, a second runway and an office block for the airport's management. The expansion of Terminal 2 would upgrade the airports capacity to over five million passengers per year.

According to accepted proposal, investments needed to extend and modernise airport Zagreb in predicted amount of 270 million Euros are double higher than the ones needed for airport Belgrade [9]. The multi million Euros project will be carried out within the next ten years and it will be carried in three stages with the final goal of increasing airport capacity from current 1.5 million to 4 million annually. Final airport capacity would be 5 to ultimate 5.5 million passengers while terminal building would consist of 9-10 air bridges, 15 gates and apron would be able to accommodate 20 aircrafts [10]. It is the most enthusiastic project in the region but due to financial crisis the realisation of the project is uncertain at the present time. One of the investments solutions, beside cohesions funds, is private sector investment through a concession agreement similar to one, which was done in airport Pristina [11].

Comparing development plans of airports Belgrade, Zagreb and Pristina which have highest development potentials, certain similarities of terminal buildings capacity projections (4 - 5.5 million passengers) are visible while only airport Belgrade plans to construct new runway and it can be stated that airport Belgrade with two runways might have a sort of advantage in taking over a position of a regional hub. Airport Skopje, with TAVs 200 million Euros foreseen investments and current capacity extension to 6 million passengers yearly, is also in competition for taking over the title of a regional hub.



Figure 3: Future layout of Zagreb Airport

Summarising all stated future investments it can be noted that airport Skopje is planning to make largest airport capacity expansion to 6 million passengers annually, Belgrade and Sarajevo are planning to construct additional runway while Zagreb is planning to make new modern terminal with highest investment need. Regarding airport infrastructure in correlation with current and future traffic volumes airports Belgrade and Zagreb, if they manage to accomplish their development plans, have highest potential to become regional hubs.

5 CONCLUSION

More and more European airports are facing congestion problems as the gap between airport capacity and the demand for airport services is widening. Core Network airports are situated in relatively undeveloped region and with its current sufficient capacity and its future development plans are seen as a potential solution to the ‘capacity crunch’. A better use of existing airport capacity and support of new infrastructure, development of new technologies and integration and collaboration with other transport modes promoting multimodality is a key to success, while the lack of multimodal connections with other transport systems (rail in particular) goes to further undermine the efficiency and potential of Core Network airports. In the transport infrastructure and the multimodal connections upgrading process, South East Transport Observatory is an important mean and its role has been recognised.

Even though many CN airports have sufficient infrastructure capacity, lack of correspondent passenger throughput enable airports to cover its investments into new infrastructure which is the reason for applying other investments possibilities such as concessions. With the right policy framework and a privatization of state owned airlines and airports, the private sector should be able to stem most of the investment needs for fleet renewal and infrastructure expansion. After possible initial costs associated with sector restructuring, the net effects of air traffic growth are thus likely to increase the fiscal space of governments, rather than reduce it, while economical improvement of the region and improved intraregional connectivity would have positive effect on overall regional development.

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