

Influence of Air Traffic on Economic Development of Bosnia and Herzegovina and Business Environment of the European Air Traffic

Rahman Nurković

(Full Professor Rahman Nurković, University of Sarajevo, Department of Geography, Zmaja od Bosne 33-35, 71000 Sarajevo, Bosnia and Herzegovina, rahmannurkovic@hotmail.com)

1 ABSTRACT

In the paper, influence of air traffic in Bosnia and Herzegovina on trends and business environment of the European air traffic is analysed. Observed globally and on a long-term basis, air traffic is one of branches of economy that has a high rapidity of technological development. Taking into consideration social and economic interest of the country in creating policy of air traffic development, it is necessary to take care of development of all factors in air traffic during making strategic decisions. In the past, air traffic developed by assistance of the state, particularly by subsidizing of the national air traffic. For political and social interest, the states subsidized also maintenance of non-profitable lines to national airlines, particularly in domestic traffic. The paper is based on a thorough theoretical and practical knowledge of air traffic and its emerging forms, not only in our country, but also in Europe. For such a complex development of air traffic in Bosnia and Herzegovina the elements of social, economic and physiognomic nature, which were special and significant for transformation, respectively for changes of the space with its orientation of spatial development of economic activities, as well as social and technical infrastructure, were considered.

Keywords: airports, economic development, air traffic, Bosnia and Hercegovina, infrastructure

2 INTRODUCTION

The influence of air traffic in Bosnia and Herzegovina's trends, and the business environment of the European air traffic, has been analysed in the paper. Globalization and integration processes are characteristics of new strategies of bigger number of industries, which directly affects economic development of the countries caught by it. Observed globally and on a long-term basis, air traffic is one of branches of economy that has a high rapidity of technological development. Elements that enhance such development are reflected primarily in development of computer science and telecommunication system and development of modern aircraft engines that reduce fuel consumption, and increase the landing and flight speed. Taking into consideration social and economic interest of the country in creating the air traffic policy for development, it is necessary to consider development of all factors in air traffic in making strategic decisions. In the past, air traffic developed by state aid, particularly by subsidizing of the national air traffic. Except for financing the purchase or renewal of aircraft fleet of airlines, with direct investing into capital investments, the states financed construction of airport infrastructure and facilities of air-traffic control. In new economic-political conditions that determine development of Bosnia and Herzegovina and with regard to tendencies of air traffic changes in our environment, deep changes in the structure and organization of our air traffic are needed, so that it can be successfully fitted into the international air traffic system with the most favourable effects on total social and economic development. It requires defining of objectives as part of state economic policy regarding the start of new cycle of development of airports and equipment in Bosnia and Herzegovina in all aeronautical domains, particularly in traffic, and also a very serious, expert approach in considering alternatives, in order to avoid mistakes that may mean missing important possibilities and a loss of previously acquired positions and potentials or, in other extreme, acceptance of non-realistic projects that would burden the national economy. For political and social interest, Germany, Turkey, Austria and Saudi Arabia have also financed maintenance of airports in Bosnia and Herzegovina. The paper is based on a thorough theoretical and practical knowledge of air traffic and its emerging forms, not only in our country, but also in Europe. For such a complex development of air traffic in Bosnia and Herzegovina the elements of social, economic and physiognomic nature, which were special and significant for transformation, respectively for changes of the space with its orientation of spatial development of economic activities, as well as social and technical infrastructure, were considered.

Traffic development in the function of international communicating is articulated with primary interest of connecting Croatia with its European environment, with a special emphasis to traffic connections that correspond with political and economic orientation of Croatia. In that sense, land traffic connections toward Central Europe and through it to Western Europe, and toward the Pannonian basin of the Central European

region and, through it, toward Northern and Eastern Europe, are distinguished (Nurković, 2007). At the same time, directions of international air traffic of Bosnia and Herzegovina with its European environment are more broadly analysed, and the transit connections on air directions of West-East communication, respectively northeast – southwest. When it comes to international traffic routes in the air space of Bosnia and Herzegovina, importance of tourist traffic should be particularly valorised, with an interest of attracting the air corridors. As important issue the traffic connecting is distinguished, respectively transiting through Bosnia and Herzegovina, which represents geo traffic wholeness with the European Union in specific parts and with specific directions. Air cargo traffic achieves an extensive transportation work. (Cargo quantity multiplied by covered distance), particularly on long distances and its participation increases in total traffic owing to a large average distance. Around 40% of the world's industrial exports, according to value, are transported by airplane today. Air traffic is currently one of transportation sectors with the most rapid development in the world's economy. Most of estimates indicate that in the first decade of the 21st century the growth of air traffic will continue with annual rates of above 5%, (almost double faster than the rate of global growth of gross domestic product).

3 METHODS OF WORK AND DATA SOURCES

Methodological approach has been imperatively adjusted to purpose of the work, as air traffic in Bosnia and Herzegovina has a strong influence on economic–geographic local and regional development. The research has been performed through economic development, transportation of passengers and goods in Bosnia and Herzegovina. In estimation of economic contribution of economic activities quantitative methods are used almost exclusively, in the range from stochastic to deterministic. Of stochastic methods, econometric methods based on analysis of time periods and panel data are used most frequently. Deterministic methods include models of gravitation (which partly can be stochastic models as well), input-output analysis (Input-output, IO) and matrixes of national accounts, and computable general equilibrium model. Many theoretical models and techniques that can be used will often be adjusted from historical or comparative studies connecting the same areas (Hirst, 2008).. In order to determine influence of air traffic on economic development in Bosnia and Herzegovina, several methods have been used. First of all, gathering and processing the relevant scientific and expert, relatively modest domestic literature, and more considerably of the foreign literature should be mentioned. With regard to insufficient statistic data on air traffic from statistic publications the biggest challenge was gathering the original statistic data from all airports and air terminals. In the paper, statistic data related to traffic of passengers and goods and economic development of Bosnia and Herzegovina have also been used and analysed. Demand for air traffic (really all transportation means) originates from population, their distribution, and economic and other factors that affect significantly the tendency to travel within the population. Very simply, one day there will be no space for meeting higher demand without unacceptable influence on services, such as delays and safety of passengers, as sufficient capacities are the advantage. Instead of waiting for that time to come, it is important that the companies involved in traffic start thinking on innovative solutions for development of new airports and passengers. For additional practical understanding of the situation and complexity of solution, a very simple system that offer a starting point and is based on regular form and a homogenous community, will be analysed considering several possible ways of serving to travel demands. It has nine identical locations (Nurković, 2016). The empirical results of a model that is used for estimation of applicability of perfect competition on the international air traffic market have been shown in (Figure 1.)

Comparative data are the valuable source of comfort for forecasters. A data model can help researchers, if not exactly with what will happen, then at least with the possibilities that are likely to be noticeable in the future. In order to determine the influence of air traffic on economic development in Bosnia and Herzegovina, several methods have been used. First of all, gathering and processing the relevant scientific and expert, relatively modest domestic literature, and more considerably of the foreign literature should be mentioned. With regard to insufficient statistic data on air traffic in the statistic publications, the biggest challenge was gathering the original statistic data from all airports and air terminals. In the paper, statistic data related to traffic of passengers and goods and economic development of Bosnia and Herzegovina have also been used and analysed.

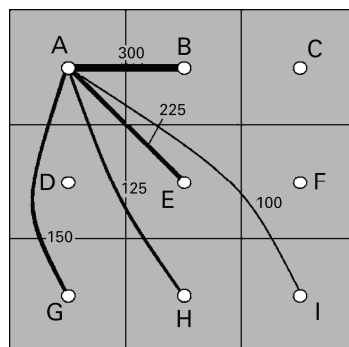


Fig. 1: Air transportation system for transportation (passengers/day) between nine evenly distributed communities of similar size.

- demand to B = 300
- demand to C = 150
- demand to D=300
- demand to E = 225
- demand to F = 125
- demand to G = 150
- demand to H = 125
- demand to I = 100 (and the total demand is 1475 passengers/day).

4 THE ECONOMIC EFFECTS OF AIRLINE INDUSTRY

Air traffic is a strong initiator of economic development, creating jobs, trade and mobility in Bosnia and Herzegovina and the European Union. It is crucial for economy of the European Union and strengthens its leading position in the world. The air traffic strategy is necessary in order to ensure competitiveness of the European sector and to use rapid changes and development of the world's economy. In air traffic sector of the European Union around 1,4 milion and 2 million people are employed, which supports between 4,8 million and 5,5 million of jobs. A large contribution of air traffic contributes to GDP, in the European Union it amounts to 110 billion EUR and total effect, including tourism, reaches 510 million EUR when the multiplier effect is taken into consideration. In makings decisions on location of the headquarters in Europe, big companies are largely lead by availability of big international flights: increase in offer of intercontinental flights of 10 % causes the rise in number of headquarters of big companies of 4 %. Increase of number of departing passengers in broader urban area of 10 % causes increase of number of employed people in local sector of services of 1 %. (European Commission, 2015). In Bosnia and Herzegovina a new strategy of development of air traffic is necessary where in last 10 years, in 2014, total traffic of passengers and goods at the airports in Sarajevo was 79,0%, in Tuzla 4,2 %, in Mostar 0,1% and Banja Luka 16,7%. The European Union appropriates considerable funds for modernization of airports in Bosnia and Herzegovina. The European sector of in 2015, total traffic of passengers at the airports London 74. 954, Paris 65.698, Frankfurt 60.899 and Amsterdam 58.168. (Table 1 and Figure 2).

The European sector of air traffic has considerably developed over the past 20 years due to liberalization of the European Union's internal market of air traffic services and significant rise in demand for air transportation in the European Union and the world. The air traffic users have never had bigger and more favourable possibilities for air travel. Number and frequency of airlines within the European Union and the international lines and number of passengers have significantly increased. The low-cost carriers from the European Union are among the most succesful according to number of passengers and market capitalization. The same is applicable for the European aeronautical industrial production. A noticable progress has also been recorded in the international air traffic sector outside of Europe, with a large growth in specific regions of the world. It is related to moving the world economic focus toward the East, particularly to Asia. For that reason, several air carriers and airports have appeared in Bosnia and Herzegovina, which are the serious new competitors to the European carriers and the biggest airports in Europe. In addition, the air traffic growth in Europe and the world should develop in accordance with keeping high standards of air traffic safety and reducing its ecological footprint, also making contribution to fight against climate change. In a few words,

the air traffic growth in Bosnia and Herzegovina must be sustainable. The contribution of the air traffic sector to economy in Bosnia and Herzegovina and the European Union, as well as its presence in the world are very important, therefore, it is crucial to keep its competitiveness, leading position and the possibilities of growth. Europe must be a leader in the international air traffic and the world's example of the sustainable air traffic, with a high level of services and ambitious standards of the European Union. The objective of this paper is increasing the competitiveness of air traffic and sustainability of the entire valuable network of the European Union and Bosnia and Herzegovina.

Airport	Total air passenger transport	Growth 2015/2014
London/Heathrow	74 954	+2.2%
Paris/Charles de Gaulle	65 698	+3.2%
Frankfurt/Main	60 889	+2.5%
Amsterdam/Schiphol	58 168	+5.8%
Madrid/Barajas	46 297	+ 11.4%
Munchen	40 861	+3.3%
London/Gatwick	40 257	+5.7%
Roma/Fiumicino	40 231	+5.2%
Barcelona/El Prat	39 425	+5.4%
Paris/Orly	29 663	+2.8%
Kobenhavn/Kastrup	26 512	+3.8%
Dublin	24 924	+ 14.9%
Palma de Mallorca	23 717	+2.8%
Brussels/National	23 269	+7.0%
Stockholm/Arlanda	23 155	+3.2%
Manchester	23 093	+5.2%
Wien/Schwechat	22 740	+ 1.2%
London/Stansted	22 514	+ 12.9%
Dusseldorf	22 448	+2.9%
Berlin/Tegel	20 995	+ 1.6%
Lisboa	20 111	+ 10.8%
Milano/Malpensa	18 445	-1.2%
Athinai/Eleftherios Venizelos	18 090	+ 19.1%
Helsinki/Vantaa	16 418	+3.0%
Hamburg	15 581	+5.7%
Malaga/Cosat del Sol	14 360	+4.8%
London/Luton	12 263	+ 17.0%
Nice/Cote d'Azur	12 013	+3.1%
Praha/Ruzyně	11 868	+6.6%
Warszawa/Chopina	11 218	+5.8%

Table 1: Passenger traffic at the leading airports in the European Union.



Fig. 2: Major traffic flows

5 THE ECONOMIC EFFECTS OF AIR TRAFFIC IN BOSNIA AND HERZEGOVINA

The air traffic sector in Bosnia and Herzegovina must be enabled to use new, growing markets from the European Union and other countries of the world, as in the future decades large economic opportunities for air companies will be opened on these. Geography is not the only factor that determines selecting the location of successful international airports and air carriers. Availability of the adequate infrastructure, nature of economic, fiscal and regulatory system and historical, cultural and trade connections are also important. It is possible to manage these parameters, and the European Union has all instruments needed for that. Experience has shown that negotiations on universal air transport agreements with the third countries are at the European Union level. For example, number of passengers was almost trippled since signing the agreement on air traffic between countries of the Western Balkans and the European Union. When it comes to Bosnia and Herzegovina, that number has doubled. With formulating the ambitious foreign policy for the air traffic in Bosnia and Herzegovina that will be based on understanding on comprehensive agreements on the air traffic, with a clear orientation toward the growing markets, the European Union can make easier for the European air traffic sector to approach important overseas markets and to increase the possibilities for investing into them, thus increasing the international connections of Europe and ensuring fair and transparent market conditions for all air carriers from the European Union in Bosnia and Herzegovina. Experience with the air traffic in the European Union has shown that with opening the markets, which would be reached by these agreements, opportunities for entering the new subjects on the market and using new business models would also be created. The research results show the increased demand and connections of airports in Europe and the world. For example, the customer demand is less sensitive on the trend of prices at the biggest airport on local market. (European Commission, 2015)



Fig. 3: Trans-frontier air traffic in Bosnia and Herzegovina in 2017.

If we look at the trends in passengers traffic in the period from 2010 to 2016 at the airports of Bosnia and Herzegovina, we can notice the constant growth in passenger numbers by 2016. In the year that follows, there was a decline in the number of passengers by 3,5% compared to 2010 as a result of the global economic and financial crisis. The impact of the crisis was reflected primarily in the transport of passengers and cargo at the airports of Bosnia and Herzegovina. The year 2010 brought a recovery of the most important European and world economic powers and an increase in the number of passengers to 5.54% that stabilizes the total number of passengers to the size of the turnover in 2011. If we look at passenger traffic from 2012 at the

airports of Bosnia and Herzegovina, we find that the Sarajevo Airport individually leads in the observed period with the average growth in passenger number of 533,915 passengers or 97.2%. The Tuzla Airport in the same period in 2009 transported 3.92823 passengers or 0.7% of total number of passengers of airports. The Mostar Airport transported 4,027 passengers or 0.7%, and the Banja Luka Airport transported 7,300 passengers or 1.3%. The Sarajevo Airport in the total number of passengers in 2014 transported 709,901 passengers or 74.2%, followed by the Tuzla Airport on the second place with 151,353 passengers or 15.8%, the Mostar Airport with 67,974 passengers or 7.1% and the Banja Luka Airport with 27,636 passengers, or 2.9%. The total number of passengers at all airports in Bosnia and Herzegovina was constantly growing from 2010 (1.130.042 passengers) to 2016 (1.225.676 passengers). (Table 2 and Figure 3) (State Agency for Statistics of Bosnia and Herzegovina, 2016).

Airport	2010	%	2012	%	2013	%	2014	%	2016	%
Sarajevo	563.266	95,3	580.058	86,7	665.638	82,7	709.901	74,2	838.966	68.4
Mostar	17.833	3,0	78.207	11,7	68.939	8,6	67.974	7,1	53.618	4.3
Tuzla	5.438	0,9	4.191	0,6	61.564	7,6	151.353	15,8	311.398	25.4
Banja Luka	4.798	0,8	6.420	1,0	8.837	1,1	27.636	2,9	31.499	2.5
Total	591.335	100	668.876	100	804.978	100	956.364	100	1.225.676	100

Table 2: Transport of passengers at airports in Bosnia and Herzegovina 2010-2016.

Unlike the trends in the number of passengers, the trends in the cargo and mail traffic is much more irregular and has significantly lower growth. In 2011, there were 1.518 tons of cargo and mail and in 2014 there was an increase of 2,607 tons of cargo and mail. Moreover, cargo and mail traffic is almost negligible in relation to the transport of passengers. In Bosnia and Herzegovina 1,609 tons of cargo and mail have been transported in the last ten years. It can be assumed that the average passenger weighs 80 kg and has at least 20 kg of luggage which means that cargo and mail traffic accounts for only 2.12% of the air transport of Bosnia and Herzegovina. (State Agency for Statistics of Bosnia and Herzegovina, 2016).

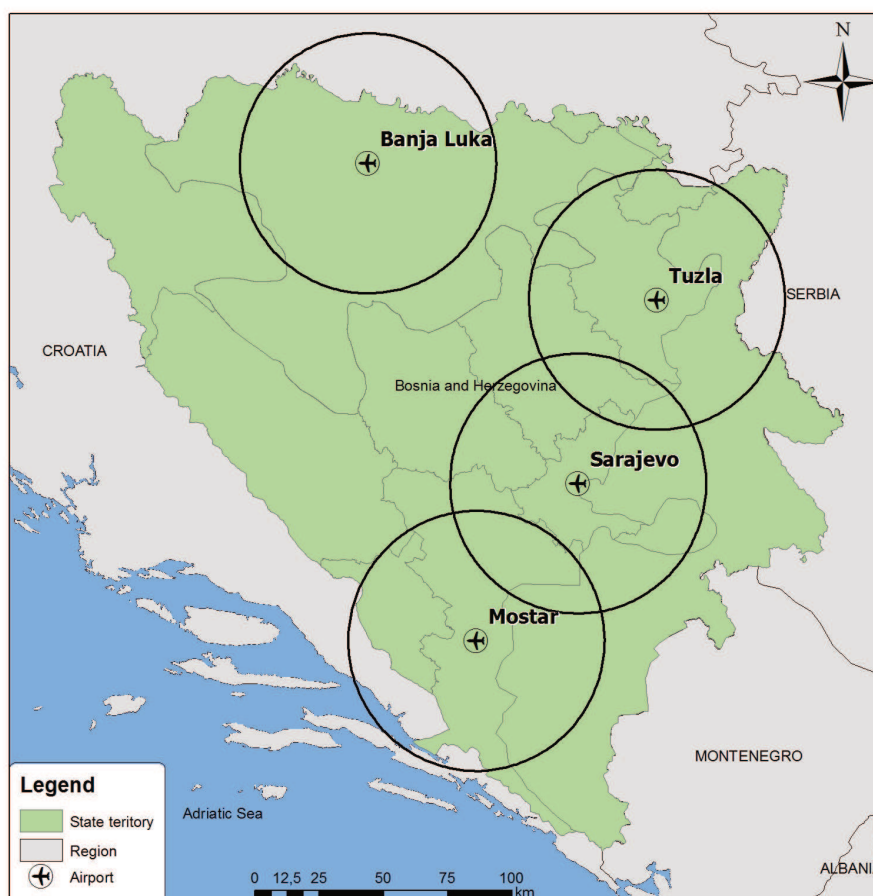


Fig. 4: Airports and airfields of Bosnia and Herzegovina, 2016.

The Sarajevo International Airport had the largest cargo and mail transport of 2,060 tons of cargo and mail or 79.0% on average in 2014, and the lowest was 1,366 or 90.0% of the total of cargo and mail transport in 2011. However, when we compare cargo transport in 2011 and 2014, there is an evident increase in traffic around 12, 7%. The share of other airports in the transport of cargo and mail halved in the period from 2011 to 2014. The exception is only the Banja Luka Airport which transported 436 tons of cargo and mail or 16.7% in 2014. The Tuzla Airport transported 109 tons of cargo and mail or 4.2% and the Mostar Airport transported 2 tons of cargo and mail, or 0.1%. (Table 3 and Figure 4) (State Agency for Statistics of Bosnia and Herzegovina, 2016).

Airport	2011	%	2012	%	2013	%	2014	%	2016	%
Sarajevo	1.366	90,0	1.526	94,0	1.603	99,6	2.060	79,0	4.238	43,5
Mostar	0	0,0	29	1,8	0	0,0	2	0,1	150	1,5
Tuzla	152	10,0	67	4,1	6	0,4	109	4,2	237	2,4
Banja Luka	0	0,0	0	0,0	0	0,0	436	16,7	5.109	52,5
Total	1.518	100,0	1.624	100,0	1.609	100,0	2.607	100,0	9.734	43,5

Table 3: Transport of cargo and mail at airports in Bosnia and Herzegovina 2010-2016.

6 GUIDELINES OF THE FUTURE BUSINESS OPERATIONS OF AIR TRAFFIC

With regard to long-term projection of development of passenger and cargo air traffic it is necessary to create a business model as a precondition for positioning of Bosnia and Herzegovina on the air market. The new business model should be perceived in the context of numerous factors. The basic precondition for construction and functioning of a new model of business operations is the competency of management system. In the nature of things, each management system is integrated to a larger or smaller extent, so we are speaking about competency of the integrated management system that is defined as a series of characteristics, which makes it able of achieving a complex mission of the integrated system, in continuity, on personnel, processing and business level. The air carriers, airports and air traffic controls in Europe have so far acted in a rather isolated and closed manner, everyone in its own yard (Conrath, et al., 2016). Therefore, the European Commission invited to a change of the management over extremely fragmented air space in order to enable the companies to lose less time, money and fuel, in the light of significant air traffic growth. The Commission adopted the second package of measures Single European Sky in 2012, aiming at the establishment of the single European airspace. The aims of proposals are further improvement of safety, reducing costs and delays, lower emissions of carbon dioxide, new jobs, and profit of the industry on global market, as the package includes also improvements in researches and technologies (Gillen et al., 2014).

The congestion of air traffic over Europe, particularly over southeast of Europe to which Bosnia and Herzegovina belongs as well, is getting bigger and bigger. Such density of air traffic considerably affects safety. For this reason, restrictions issued by air traffic controls to air carriers are getting more and more frequent, so that they are late even before flying, the passengers get nervous, particularly those who are supposed to continue their travel and to be on time for another flight. Due to delays, the carriers lose the place they had already reserved at some airport where they land or take off in the scheduled time, so it is quite understandable that new radical measures are necessary for salvation of the European air industry as a whole. The Sarajevo flight control is one of the most modern in Europe, as it possesses the supervisory airspace system like other countries in Europe. In new economic-political conditions that determine the development of Bosnia and Herzegovina, and with regard to tendencies of air traffic changes in our environment, Europe and the world, deep changes are needed in the structure and organization of our air traffic so that it can be successfully fitted into international air traffic system, with the most favourable effects on total social and economic progress. The traffic has had a very dynamical development in the European Union and has become a significant branch of mass transportation. Air traffic is one of transportation sectors with the fastest development in the world's economy today. Most of forecasts indicate that in the 21st century air traffic growth will continue at annual rate over 5%, (almost double faster than the global growth rate of social product.). This means that doubling of the air traffic volume is expected in the next 12 to 13 years.

With liberalization of the international exchange and development of regional co-operation and integration, it comes to strengthening of competition, to gradual liberalization of traffic rights and equalizing the air

regulations, not only on bilateral but also on multi-lateral and regional basis (the example of the European Union). Privatization of the national airline companies in some countries has been implemented or is ongoing, (in dependence of how strong and consolidated national economy is and the air traffic within that), but in most of countries national capital makes majority and, all in all, the foreign carriers are only exceptionally allowed to acquire more significant share in their ownership structure. Due to increase of competition, many air companies in the European Union associate through the capital (to an extent allowed by the state airline policy) and even more through business co-operation and associated exploitation of the lines and the fleet, for the purpose of reducing costs and transportation of passengers and goods. Influence of globalization of the world's economy and trade indicate to need for gradual harmonization of national air policies and to perspective of global regulations of air traffic. Process of market liberalization is unstoppable, nevertheless it is developing unevenly (spatially and timely), because it depends of geopolitical circumstances, economic structure and extent of general economic development of single countries and larger areas in which they are located (Borel, 2012).

7 CONCLUSION

The paper has been largely focused on the segment that belongs to air traffic and economic development of Bosnia and Herzegovina, with a particular review to business environment of the European air traffic. It certainly deals with air traffic and air space, and multilateral agreement on the common European airspace, as well as its objectives and principles and on status in Bosnia and Herzegovina in the context of the European integrations. The objective of this paper was to determine which of the regulatory frames Bosnia and Herzegovina must satisfy for joining the European Union. This tells us that Bosnia and Herzegovina considerably stays behind other countries on the way to the European Union membership. The air traffic of passengers and goods constantly increases, as it can be concluded in the first chapter of this paper. Traffic growth of all airline carriers, for the most part of the low-cost ones, causes a need for larger infrastructure.

The first important step has been made; the civil air agency that would be authorised for the establishment of functional blocks of air space and for certifying the providers of air traffic control services has been established. An essential agreement that was signed by Bosnia and Herzegovina is the European common air space and the Agreement that would enable competitiveness of air carriers, simplify the procedures in preparations of international flights and control of performing air traffic and would largely help Bosnia and Herzegovina in the procedure of change and adjustment of regulations of the European Union.

With signature of that Agreement, Bosnia and Herzegovina has fully equalized its legislation with the legislation of other signatory countries in the process of adjustment with the regulations of the European Union. There are already several master plans and finally, the project of reconstruction and development of the airports in Bosnia and Herzegovina has recently been allocated by the European Union. Perhaps at this point such a big project is not indispensable for the airport of Sarajevo, however, when Bosnia and Herzegovina joins the European Union, when free movement of goods, people, assets and capital is achieved, it can become one of the larger regional centres for exchange of these. The airports in Sarajevo, Tuzla, Banja Luka and Mostar will then require new and much bigger passenger terminals and the air bridges that are inevitable today. Undoubtedly, there is a huge potential in this area for the air traffic growth and the governments, air carriers and airports should together find the best models for promotion of tourism and travel. The undeveloped network of air connections within the region is a fact and that should be a challenge for all.

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