

## THE DEVELOPMENT OF PASSENGER AIR TRANSPORT IN AN ENVIRONMENT OF DYNAMIC CHANGES

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# THE DEVELOPMENT OF PASSENGER AIR TRANSPORT IN AN ENVIRONMENT OF DYNAMIC CHANGES

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*Abstract:* The author's primary goal is to present a number of features related to air transport – implemented by low-cost airlines and on the basis of an analysis of the current state of passenger air travel – and to outline some prospects for the development of aviation as a whole. To achieve such an objective, the advantages and deficiencies accompanying the transportation of passengers by low-cost airlines have been systematized. In accordance with these theoretical considerations, an analysis has been made of the current dimensions of this market segment's development, based on the indicators that globally account for the market share of low-cost airlines in certain regions around the world, including Europe, as well as for the annual growth in demand for passenger air transport on a global level. On a national level, Sofia, Varna, and Burgas airports' number of passenger movements have been monitored on a yearly basis, while the resort airports have monthly reports. In her conclusions, the author discovers a few prospects for development in air travel which are mainly associated with the symbiosis between transport alternatives and ecological transport solutions.

*Key words:* air transport; passenger traffic; low-cost airlines

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## **Introduction**

Passenger air transport has undergone transformations during times of health, political, and economic crises – now a big part of modern reality on a global scale. Transport operators seek to take strategic and tactical approaches in order to survive and to maintain their place in the transportation services market, which in turn has become an increasingly bigger challenge.

On this premise, interest has arisen in studying this market segment, being subject

to dynamic changes and reacting to all manner of economic and social changes in society.

The goal of this article is to present on a theoretical level a few features of air transport that are being implemented by low-cost airlines and, based on an analysis of the current state of passenger air travel, to outline some prospects of development for aviation as a whole.

To achieve such an objective, there are basic tasks to be resolved associated with:

1. The systematization of the features of air transport implemented by low-cost airlines.
2. The analysis to be made with regard to the current state of passenger air travel.
3. The prospects of development for passenger air travel.

The main thesis which the author supports in the present study is that passenger air transport has been developing in a dynamically changing environment in recent years, influenced by consolidation in the low-cost airline sector and the development of the COVID-19 health crisis, and that opportunities for development should be sought out in cooperation with railways in short- and average-distance transportation, above all for environmental, economic, and operational reasons.

The object of the current paper is passenger traffic by air on a worldwide and national scale, while the subject is its current state.

The timeframe of the study encompasses the period of 2012–2020/2022; the limitations accompanying it are associated primarily with the lack of optimal, up-to-date information, but this does not take away from the qualities of the research processes.

### **Features of air transport by low-cost operators**

Air transport is becoming increasingly more preferred, especially for long distance travel. This mode of transportation is a popular, rapidly growing industry that provides a wide range of important economic and social benefits. Those benefits include employment, trade, tourism, investment, enhanced productivity, increased competitiveness, knowledge transfer, greater mobility, and many multiplier effects (Daley, 2010).

Commercial air transport – encompassing both regular passenger traffic and chartered air services – is an important parameter for global and regional tourist flows of passengers (Duval, 2013) who often choose to pay a higher price in comparison to the available offers of other transport alternatives, which is done to save time and secure comfort during travel. There is growing interest within the aviation industry

that can also be linked to the application of the idea of low-cost airlines which, in essence, significantly reduce the servicing costs of aircraft and customers without endangering the safety of passengers. The main costs that carriers save are related to:

- airport charges, due to which planes land at remote airports;
- the operation of flights with bigger aircraft (150–250 seats), allowing for a decrease in cost per passenger;
- the lack of airport services such as transport from the terminal to the airplane, the transfer of hold luggage, etc.;
- no free food and drink offers on board; these are only available with additional payment; and
- issuing e-tickets exclusively that are primarily paid for online.

There are some advantages and disadvantages associated with this type of passenger transport. The advantages to be highlighted would be:

- significantly lower ticket prices juxtaposed to those of standard airlines when purchased in a timely way;
- customer access to price formation due to the sale of one-way tickets;
- name changes on a specific reservation for an additional fee;
- the option to apply flight changes up until a few hours before take-off, also for a fee; and
- guaranteed 24-hour access to reservation systems and online payments.

The disadvantages of low-cost passenger transport can basically be reduced to:

- increased cost and flight time as a result of the necessity to acquire additional transport from secondary airports to cities;
- extra charges for services provided on board the airplane;
- lack of scheduled transfer flights, impeding passengers from a logistical standpoint;
- in case of a missed connection, the passenger losing the ability to use that ticket because the airline isn't accountable under these circumstances;
- the expense of changing a ticket shortly before a flight, sometimes several times higher than the original ticket price;
- non-refundable payment for already purchased tickets;
- flight operations usually taking place outside peak airport hours — very early in the morning or very late in the evening; and
- transfers taking much longer than with a regular airline.

In the context of these unfavourable economic conditions on a global scale, low-cost airlines are increasingly growing in popularity.

Airports as well as airlines are important in passenger decision-making. Those airports with high-quality infrastructure tend to attract larger aircraft at lower frequencies, for economic reasons, while smaller airports and those with lower quality tend to offer feeder services by major carriers and point-to-point services from LCCs (Low Cost Carriers) and charters where smaller aircraft are the norm (Biegera & Wittmer, 2006).

In order to trace the current prospects for the development of air transport under the conditions of a dynamically changing environment, the actual dimensions of this market segment's development have been analyzed based on the indicators that account for the market share of low-cost airlines in certain regions like Europe as well as for the annual growth in demand of passenger air transport on a global level. On a national level, passenger movements at Sofia, Varna, and Burgas airports have been monitored on a yearly basis, while the resort airports have monthly reports. In the sense of statistical concepts and definitions, "passengers present in airports" means all passengers on board the aircraft upon landing at the reporting airport or when taking off from the reporting airport, including direct transit passengers (National Statistical Institute, 2022).

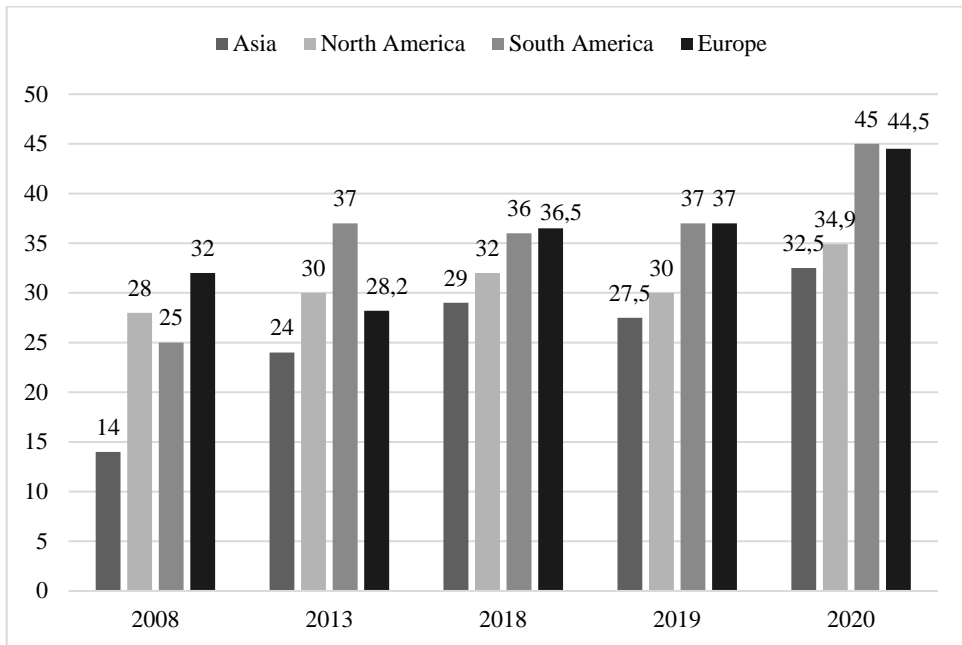
According to Kenneth Button and Samantha Taylor, "A major criterion for measuring the success of our air transportation system should be our ability to use air travel as a competitive advantage in a global economy" (Button & Taylor, 2000). It means that the development of air transport must be studied systematically and thoroughly.

### **Study of the development of passenger air travel**

Passenger air travel is usually preferred for covering long distances, which in turn is accomplished in the span of relatively short time frames and offers comfort and conveniences. These are the primary characteristics determining the competitive positioning of air transport in the passenger transport segment. A big contribution in that regard would be the application of the concept of low-budget flights, which offer combined speed, comfort, and reasonable pricing when executing transport processes. This set of advantages raises the level of customer satisfaction because it provides them with the needed balance between the price and quality of a transport service.

In recent years, there has been an increase in the market share of low-cost airlines in the regions of Asia, North and South America and Europe (see Figure 1).

While the share of Asian carriers was just 14% in 2008, by 2020 there was an 18% increase. In Latin America, the growth levels reached up to 45%. The least significant rise in market share was in North America, where the positive trend was quite reduced by comparison, amounting to only 7% over a span of 12 years.



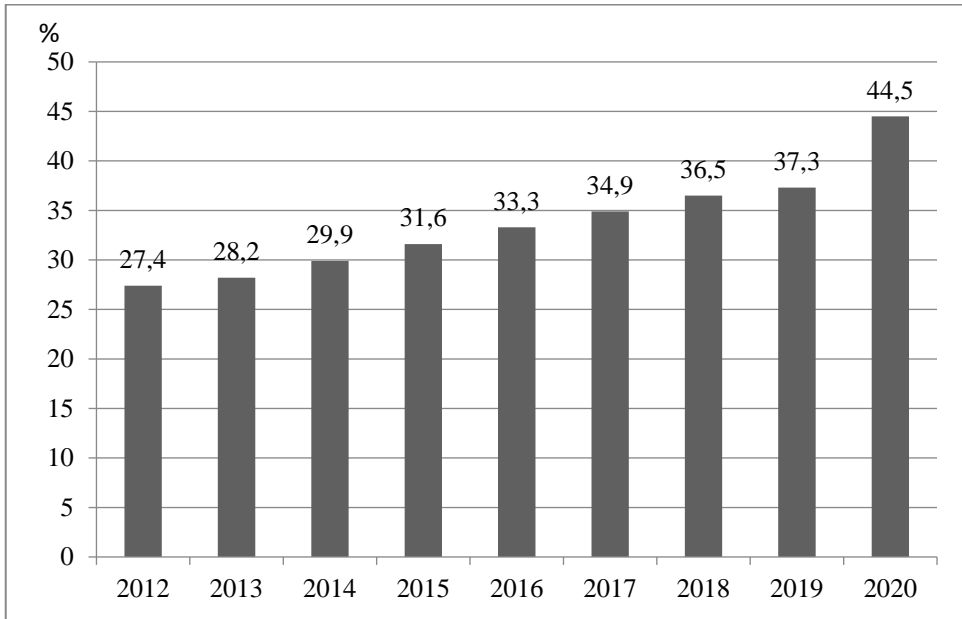
Source: Statista, 2022c.

Figure 1. Market share of low-cost airlines by region for the period of 2008 – 2020

In 2020, low-cost airlines in Europe possessed 44.5% of the total capacity of seats in the European airspace (see Figure 2). Regardless of the difficult year it was, Ryanair Group maintained its position as the airline with the largest share of passenger transport in Europe, carrying 51.7 million people in 2020.

An essential factor in Ryanair Group’s success (Ryanair, Ryanair Sun, Ryanair UK, Malta Air, Buzz, Lauda Europe, Lauda Motion) is the fact that the company has the biggest fleet out of all low-cost companies in Europe: the number of aircraft reached 512 in 2022, or 188 more than Jet Group’s fleet (easyJet, easyJet Europe, easyJet Switzerland) of 324 operating aircraft, while the former also outnumbers Wizz Air Group (Wizz Air, Wizz Air Abu Dhabi, Wizz Air Bulgaria, Wizz Air Ukraine, Wizz Air Malta, Wizz Air UK) by 356 units (Planespotters.net, 2022).

Low-cost airlines in Europe were operating a total of 1,773 aircraft as of July 2022, meaning that the top three companies possessed over 56% of the air fleet and the 19 others on the market shared 781 units. This basically creates prerequisites for the creation of conditions for remarkably strong competition in this market segment; however, it can also be observed that there are market leaders who dominate and exert significant influence over market trends.

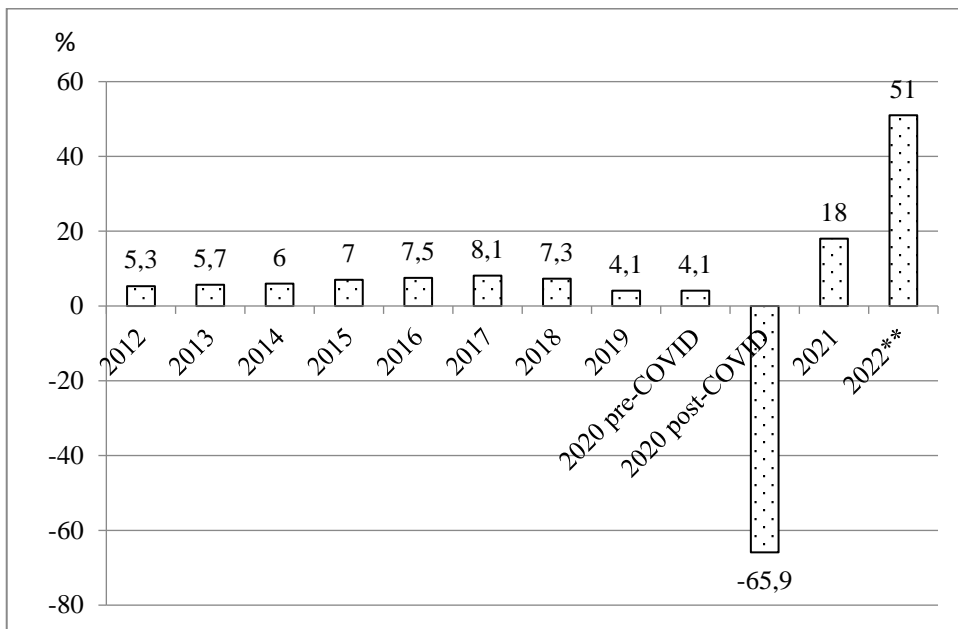


Source: Statista, 2022b.

Figure 2. Market share of low-cost airlines in Europe, 2012 – 2020

In spite of the fact that the market share of low-cost airlines in the European aviation industry has increased by nearly 20% over the past decade – 27.4% in 2012 to 44.5% in 2020 – this period saw a very strong competitive reaction from traditional carriers that have been operating with a full portfolio of services to preserve their market position. For example, conventional carriers began to offer a few cheaper flight options called “budget economy class”. Regardless of this, low-cost airlines already possess well developed strategies to minimize cost, which allows them to operate at much lower expenditure levels. An example of this is the optimization of the useable volume of aircraft: they usually achieve up to 20–25% more passenger seats compared to traditional air carriers, made possible through smaller gaps between the seats (Stoyanov, 2015).

The annual growth in demand for air transport among passengers has been impacted significantly by the coronavirus pandemic, which created a new variety of barriers for passengers (see Figure 3). This statistic represents the annual growth in global air traffic passenger demand between 2006 and 2022. In 2021, due to the coronavirus outbreak, global air traffic passenger numbers increased by 18 percent, and projections for 2022 were for growth of 51 percent.



Source: Statista, 2022a.

Figure 3. Dynamics in the development of annual passenger air transport growth on a global scale for the period of 2012 – 2022 (projected growth)

Throughout the studied period, there was a tentative development in demand for passenger air travel; the decline became massive in the first trimester of 2020 when some very strict measures for social isolation of the public were taken in the span of very narrow time frames. In a matter of a few hours, the movement of people ceased towards all possible destinations outside their current place of residence. These extreme measures implemented by governments worldwide ended up abruptly cancelling people’s journeys while freight transport processes continued under certain conditions, their operating logistics providers meeting a number of challenges in maintaining a workflow close to normal.

Respectively, all of these unusual barriers to the movement of traveller flows have contributed to the steep drop in interest towards air travel, as well. Airlines are some of the worst-affected by the health crisis, their recovery towards their previous state in 2019 only possible on the condition that the spread of COVID-19 stays limited and does not affect people’s decisions to travel while the international political environment stabilizes.

In Bulgaria, the focus of attention is the national air carrier known as “Bulgaria Air”



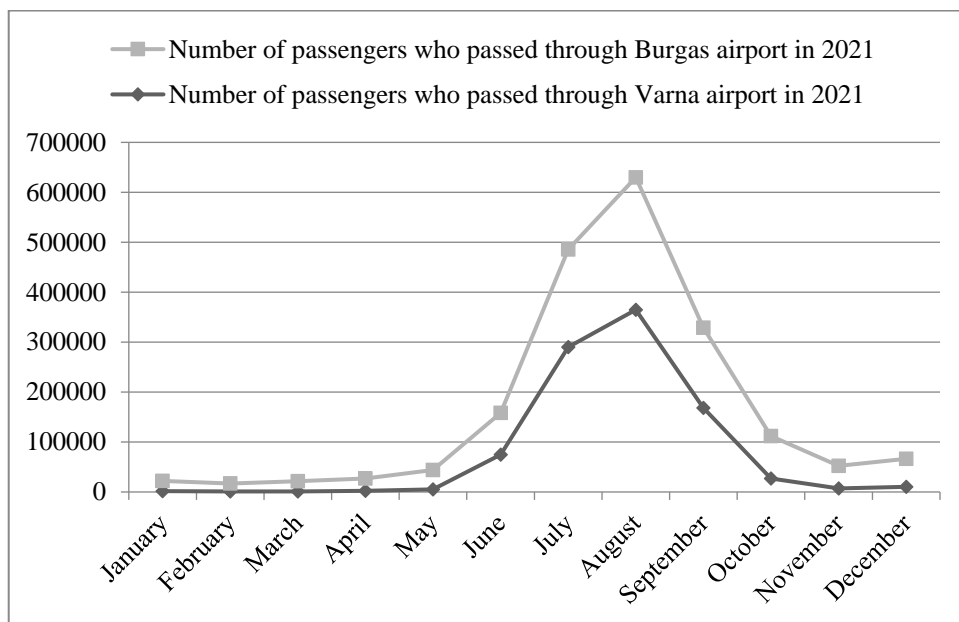
AD, part of the “Bulgarian Airways Group” EAD, which suffered negative effects from the COVID-19 pandemic in 2020 in several major areas (“Bulgarian Airways Group” EAD, 2022), namely a reduction in revenue and cash flow, a drop in profits, and negative financial results.

In quantitative and qualitative terms, the effects on the performance of the Group in 2020 can be summarized as follows (“Bulgarian Airways Group” EAD, 2022).

- Scheduled flights for the airline were reduced by 50% in 2020 by comparison to 2019. “Bulgaria Air” AD managed to fulfil only 8% of its planned charter flights scheduled for the summer season of 2020.
- Profits from charter flights decreased by 90% compared to the same period the previous year. In 2020, the airline indicated a 60% drop in sales from affiliated tourist agencies; 45% from its online sales; and 58% from the company’s offices in the country and abroad. Profits from the flights performed in 2020 shrank to 50% of 2019 totals.
- In 2020, the airline registered a significantly higher percentage of passengers who failed to appear for their flights – between 20 and 30 passengers per flight compared to an average of 3 to 5 no-shows in 2019.
- For the larger portion of fixed costs – lease payments, technical service, insurance, etc. – no mechanisms for their optimization or reduction have been created, despite the decreased volume in activity.
- Staff cuts were necessary, with 80 employees from the airline being relieved of duty in 2020 due to the COVID-19 pandemic alone and only essential personnel remaining. This led to the necessity for unemployment benefits payouts, as per employment-insurance regulation.
- There were delays in the implementation of technical directorate activities related to planned repairs and technical maintenance of aircraft due to delays in the delivery of materials and spare parts from suppliers as well as others connected to the maintenance of continued airworthiness of the units. The main reason for not abiding to deadlines cited by suppliers of spare parts and repair services was a lack of personnel.

Environmental factors have a strong influence over airport traffic in Varna and Burgas, which are specialized primarily in passenger service and have an emphasized seasonal workload (see Figure 4), considering their proximity to summer resorts.

Regardless of their regional importance, Varna and Burgas are among the airports across Europe participating in the industry’s growing commitment to a net-zero future. As the Toulouse Declaration marks a new chapter in Europe’s journey towards the 2050 zero aviation goal, Varna and Burgas airports have emerged as some of the strongest voices on the continent driving the initiative forward (Varna Airport, 2022).



Source: Fraport Group, 2023.

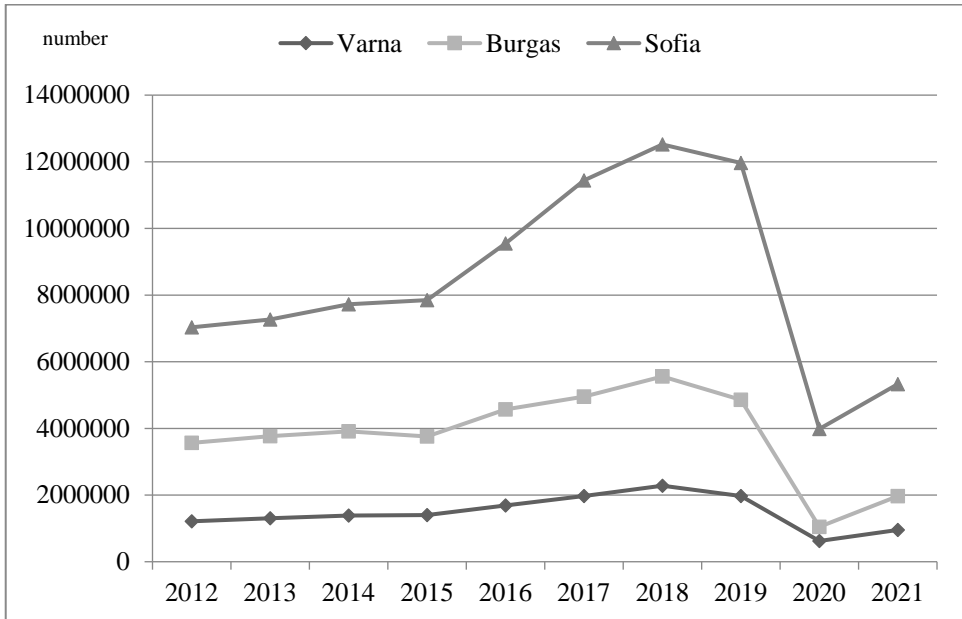
Figure 4. The dynamics in the development of passenger movements from Varna and Burgas airports separated by month in 2021

In 2021, traveller flows going through the two Black Sea coastal airports indicated their peak levels, traditionally during the months of July and August, with significantly lower customer interest in comparison to 2019; still, this was a positive trend over 2020, as evidenced by the data on the dynamics of passenger movements during the studied period (see Figure 5).

The reports on passengers serviced by the primary Bulgarian airports unequivocally reflect the global trends that have defined air transport for the past few years.

Sofia airport has the biggest exploitation capacity in the country, which corresponds to its proximity to the capital, and logically it offers the biggest choice of destinations and air operators. At the same time, it covers a vast territory of potential passengers, considering the fact that there is only one nearby operating airport, which is Plovdiv's, the latter having much more limited options.

One airport that definitely must be taken note of is Sarafovo's (Burgas), due to its performance indicators related to total passenger traffic. Because of them, it is seriously gaining on its competitor in Varna, where a stable upward trend has been maintained throughout the years. The former reached an increase of 887,947 passengers in 2019, 1.5 times greater than those going through the terminals in Varna.



Source: Fraport Group, 2023; Sofia Airport, 2022.

Figure 5. The dynamics of passenger movements in the airports of Sofia, Varna, and Burgas for the period of 2012 – 2021

On the other hand, there has been a significant decrease in the number of passengers processed by both airports – there were three times fewer departing and arriving passengers in Varna in 2020 versus 2019, while there were 6.8 times fewer people processed in Burgas. In 2021, there was slight growth, but considering the instability of the external environment, expectations aren't especially optimistic for the medium term.

The crisis in the aviation sector is happening on a serious scale at global and national level, primarily related to the exploitation of this transport alternative for passenger travel and on a very limited scale to the transport of freight flows.

### Prospects for development in passenger air transport

The development of air transport implies the application of new practices that can combine the speed and comfort of passenger travel with the necessity for environmental protection. This is precisely the type of direction that outlines some of the symbioses between those transport variations which are capable of defending the interests of both passengers and society as a whole.

One future perspective is associated with the creation of express train connections

that can substitute short-distance flights in the face of growing concerns regarding the carbon footprint generated by aviation. The role of railways in the air transport industry is usually limited to providing access to airports. However, the development of high-speed rail networks and the congestion and environmental problems faced by the air transport industry suggest that railways could have a greater role in working with airlines to provide an integrated transport service for medium-distance journeys (up to 800 km) (Givoni & Banister, 2007). The main factors influencing the modal choice between air and high-speed rail can be defined as access time, toll charges, and operating frequency (Park & Ha, 2006), and the list could be expanded with links to other transport alternatives, baggage volume, etc.

This approach is quite promising if we take into account passengers' tendency to trust land alternatives when their destinations are relatively close. This is relevant because the main advantages of air transport aren't of much use for short-distance travel; its strength rather lies in covering large distances in relatively short time periods. The reason behind this is that passengers have to reserve a serious portion of time to pass through the checks accompanying their journeys by air. In addition, this amount of time has grown significantly since 2001, when the world witnessed the unprecedented 11th of September attacks in the USA, and once more during the pandemic, when extra health and safety requirements were implemented. If we also include the possibility of flight delays due to other objective reasons, it can be deduced that there is a substantial increase in the time needed for air travel in comparison to high-speed rail travel, while the price differences aren't very motivating.

At the same time, air carriers do not have a significant economic interest in sustaining short-haul routes because they are often the source of accumulated losses. Furthermore, these flights have been seriously criticized in regard to their exhaust emissions, which are reported to be relatively high per passenger. This reflects on the carriers' financial results along with their societal image – by contrast, there are already some serious “green” practices in rail transport that have proven to be effective for the purposes of environmental protection. A typical example is the railway network in the Netherlands: since 1 January 2017, it has been powered by electricity completely generated by wind power stations. According to the statistics, this means that nearly 600 thousand people do their travelling regularly without leaving a carbon footprint. To this end, it is necessary to make serious investments in the expansion of wind farms in other countries along with aims to accomplish the primary objective that relates to the reduced consumption of rolling stock energy, which will additionally enhance the effects of measures taken in order to facilitate an optimally smooth running of transport processes.

However, to accomplish such a rerouting of passengers from air to rail travel, it is

essential not only to take the ecological aspects of the problem into account; adequate transport solutions should also be proposed for land travel to satisfy the requirements of passengers with respect to travel time and speed. Services that correspond to passengers' expectations and make them willing to switch from air to rail transport have not been provided in Bulgaria. The reason for this is that our country has ignored the developmental opportunities of a high-speed rail network which could connect the Bulgarian transport system to that of Europe's. This is a prospect that demands the establishment of connected analogue paths between neighbouring countries, an option that hasn't been realized yet due to the fact that none of the Balkan region states possess functioning high-speed railways.

There is a noteworthy trend, however, among other former socialist republics in Central Europe who are planning to build and exploit these innovative approaches when it comes to passenger travel. One example is the Czech Republic, which plans to join the European high-speed rail network in the foreseeable future. Such a step in the right direction will allow the country to increase its railway capacity and the speed of journeys, as well as to stimulate its economy and provide better access to employment for its citizens alongside a variety of other opportunities. It also has intentions of building transport routes that cater to the needs of traveller flow only, with a projected vehicle speed of 320 km/h. The high-speed network south and east of Prague is projected to service around 5.5 million people, or approximately half of the Czech population, which means that by the time it's finished in 2050, there will be 130,000 passengers expected to make use of it daily. The "pre-investment phase" of the entire programme began in 2021, while construction works on the first sections of the planned network should begin in 2025 (Modern Railways, 2022).

Another good example Bulgaria can follow is Poland's, the latter offering a high-speed rail service since the 14th of December 2014 with the introduction of 20 Pendolino trains, which can travel at a speed of 200km/h and operate on 4 separate lines exiting Warsaw (Poland Trains, 2022).

Therefore, good practices in other former socialist republics can be studied and adapted to real conditions in Bulgaria by seeking sources of funding and calculating the financial parameters and cost effectiveness of the exploitation of high-speed rail options in respect to the national territory, the population's purchasing power, the lack of adequate international transport connections for the realization of rail travel, etc.

## **Conclusions**

In conclusion, there are a few primary prospects in the development of air transport in the segment of passenger travel that can be reduced to the following ones, which take precedence.

*Firstly*, on a global scale, there has been growth in low-cost air carriers linked to the main advantages of this choice related to the balance between the quality of a transport service, as well as the cost, comfort, and speed of travel.

*Secondly*, the European air space is also dominated by low-cost carriers, and their market share levels have reached over 44% of the passenger travel segment – the most serious market participant being Ryanair Group, followed by easyJet Group and Wizz Air Group.

*Thirdly*, air transport on a global and national level has been significantly influenced by the health crisis that overtook the world in March 2020, resulting in an unprecedented drop in air traffic. The Bulgarian airports in Sofia, Varna, and Burgas have also been severely affected by the global processes inhibiting the movement of citizens.

*Fourthly*, there are prospects for development in aviation connected to building a symbiotic relationship with short-distance rail transport and having it act as a substitute for flights due to growing concerns about the carbon footprint of aviation.

## **Conflict of interest**

The author declares no conflict of interest.

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