Abstract:
Air transport of cargo (Cargo) on global scale is not significant in quantity, but its value presents 35% of the total world cargo transport. This amounts to approximately $ 60 billion of financial realization. Directly or indirectly, air cargo transport provides around 32 million workplaces worldwide. All this makes it a significant segment of the global economy. Zagreb Airport (ZLZ) in the long-term realized more than 85% of Croatian air cargo traffic. This means that the responsibility for the development of this segment of air traffic lies at ZLZ. Accordingly, ZLZ determined three strategic development guidelines for developing this segment of business activities: 1) technology development, 2) development of a network of regular air traffic connection from/to Zagreb and 3) infrastructure development. This paper is focused on displaying the possibilities for securing the third strategic guideline, infrastructure development, which is to be solved through Zagreb Airport Cargo City (ZACCP) project implementation.

Key words: air cargo traffic, intermodality, Zagreb Airport Cargo City.

1. INTRODUCTION

Function of a cargo terminal is to handle and forward cargo and mail on airport (Cargo). Facilities and technology within the storeroom should provide acceptable and expeditious cargo and mail handling and forwarding processes, especially when it comes to the combination of land and air transport, and vice versa. Keeping this fundamental requirement in mind, in project management it is necessary to perceive the financial aspect and expansion capabilities of the terminal without major modifications if the future development of freight traffic requires it.

After entering the full membership of the European Union Croatia should be integrated as part of a unified transport system regulated by the so called White Paper and based on the principles of intermodality and sustainability. Intermodality implies optimization
and cost reduction in the transport process, while sustainability implies a rational impact of expanding activities on the environment. Zagreb Airport Cargo City Project (ZACCP) is based on both principles and is compatible with other transport infrastructure projects in the surroundings.

General management objectives of the Zagreb Airport are medium- or long-term development goals. Some of the general objectives are: 1) to develop a network of lines in regular air traffic and to increase traffic to 3 million passengers and 20,000 tones of goods annually by 2015; 2) to develop infrastructure (new passenger terminal construction project) and 3) to build new capacities for cargo handling and forwarding – ZACCP).

2. LOCATION

The implementation of ZACCP is planned at the location of the Zagreb Airport in the triangle bounded by the southern Zagreb ring road, railroad track running through Velika Mlaka and connecting the railway marshalling station to Zagreb-Sisak railroad and existing runway, i.e. its northern boundary. It's a total land area of approximately 350 acres which is reserved for expansion of airport activities by the Spatial Plan for the County of Zagreb district and the city of Velika Gorica. The land is privately owned and there are a lot of small parcels and owners. There are no problems expected with buying off land, since recent legal solutions enable the acceleration of this process through “dispossession” procedures.¹

Image 1. The area in which Zagreb Airport Cargo City is to be built

Source: Terms of Reference for the conceptual design of Zagreb Airport Cargo City, ZLZ, Zagreb, 2012, p. 19/30.

¹ Zakon o izmjenama i dopunama Zakona o zračnim lukama, N.N. 14/11.
Investment feasibility study was made and it shows that the return of investments is achievable in a period of 10 years\(^2\). Subdivision study made by University of Zagreb Faculty of Geodesy clearly determines the number of each cadastral plot through which one can gain insight into the ownership certificate, parcel area etc.\(^3\)

3. PROJECT DESIGN PHASES

ZACCP implementation is planned in three phases. The first phase is the most complex because it provides connections to the infrastructure: energetic, utilities, roads and railway tracks. This phase envisages the construction of storage facilities with special spaces of an overall surface area 8300 m² and all necessary equipment, which would suit the needs for the turnover of approximately 60 000 tons of cargo per year. One partner has already expressed a need for 3,000 m² of space. Office space to be used for needs of Zagreb Airport, partners and the civil service; cargo aircraft apron of approximately 20 000 m², which would be enough for two Boeing 747 sized airplane positions or for three to five smaller positions and a taxiway system within which would be a taxiway that could take over a function of a second runway would also be built.

The second and third phase imply the potential expansion of warehouse, office and parking space.

Image 2. ZACCP Master plan

Source: Zagreb International Airport, Master plan, 2008.

\(^2\) Strategic Business Plan Zagreb Airport Cargo City Project, Zračna luka Zagreb i Logplan, 2010.

\(^3\) Izrada geodetske studije prostornih mogućnosti razvoja Zračne luka Zagreb sjeverno uz uzletno slijetnu stazu, Geodetski fakultet svezćilišta u Zagrebu, Zagreb, 2009.
Potential investors with access to financial resources are expressing interest in this project, because they consider it realistic and feasible. One of the sources of financing this project are EU funds, but for their application the project should have a high level of documentation. That means it is necessary to make the following documents:  
- Feasibility study, including variable analysis;
- Cost/Benefit analysis (risk analysis, financial and economical analysis);
- Calculation of missing resources (Calculation of funding gap), indicating the contribution of EU funds;
- Conceptual Design;
- Zoning Permit;
- Information on plot status;
- Future operations and maintenance model description;
- Cost assessment of all project components;
- Financial Plan;
- Procurement Plan;
- Arrangements in implementation and term plan;
- Environmental Impact Study (including public discussions);
- Master project;
- Construction permit;
- Completed application form for the EU funding.

It is also required for the owner, in this case the Republic of Croatia, to make the necessary decisions.

The value of investments will be determined precisely when all input parameters are set. Predictions show that the total cost of the first phase would be between 21 and 23 million euros, which includes documentation, land, construction and equipping facilities.

4. INTERMODAL SURROUNDINGS

When it comes to logistics centres and Cargo traffic there are other projects compatible with ZACC project, beside the project of building a new passenger terminal. These projects are: 1) Croatian Railways logistics centre, HŽ Cargo in Dugo Selo; 2) Rijeka-Zagreb-Budapest railway modernization project; 3) Croatian Post logistics centre construction project; 4) Port of Rijeka container terminal and 5) long-term, project of navigability of the river Sava to Zagreb. These projects are important for including Croatia in the unified EU transport system, based on the principles of intermodality and sustainability, and for positioning Croatia in the European logistics market.

HŽ Cargo logistics centre project in Dugo Selo should increase railroad share of cargo transport and enable it to take over cargo transport from other corridors. This project is being implemented in cooperation with multiple domestic and foreign partners who function as a consortium.

Implementation of Rijeka-Zagreb-Budapest railway modernization project should significantly shorten and speed up cargo traffic, thus increasing capacity of the route which would better position port of Rijeka in terms of its importance for the countries of Central Europe. This project would provide Rijeka with better connections to European corridors.

4 Operativni program „Promet“, Ministarstvo mora, prometa i infrastrukture, Zagreb, 2011.
According to expert assessments Croatia could get more than 70% of necessary funds for this project from European Union access funds.\(^5\)

The project of building a new logistics centre for the Croatian Post in the vicinity of ZLZ should allow for better positioning in the market. This is important due to the onset of postal service market liberalization in Croatia in 2013.\(^6\)

Port of Rijeka also strives to have a more significant role in European intermodal transport system. A great advantage of port Rijeka is its position, which makes transport to and from Asia five days shorter than transport from port of Rotterdam, and six days shorter than from port of Hamburg.

Project of navigability of the river Sava to Zagreb is likely to be realized in the future. This way river traffic would be an integral element of intermodal transport in terms of ZACCP, and also of other projects.

Location selected for ZACCP should be considered and evaluated within this context. Its fundamental feature is good transport connectivity, since one of the most important ZACCP goals is integration into a unified transport system of the EU through intermodal transport connectivity with road, rail, water and air transport.

5. STRATEGIC GUIDELINES FOR THE DEVELOPMENT OF ZLZ CARGO TRAFFIC

In the period from 1993. to 2006. ZLZ realized an average annual 85.35% of total Croatian air cargo traffic.\(^7\) Consequently, the responsibility for the development of air cargo traffic in Croatia lies at ZLZ. For this purpose, three strategic guidelines for the development of cargo traffic have been determined.

The first phase is technology development which implies a complete computerization of business processes, competent staff, quality management, etc. As a part of this, successful participation in IATA global freight projects such as “E-Freight”\(^8\), concerning an increase in efficiency through elimination of paper documentation and the introduction of electronic business, and “Cargo 2000”\(^9\), which is a project of standardization and quality management in the freight transport process, was achieved.

The second strategic guideline is development of regular connections from Zagreb. Vision is to establish direct regular traffic from Zagreb to the U.S. and destinations in the Far East, eg China or South Korea. That would be a new offer for customers, and would imply an increase of cargo traffic through Zagreb, because the Asia-Pacific region accounts for more than 44% of global air cargo traffic.\(^10\) Developing a network of regular connections is important because these airplanes beside passengers also carry cargo, unlike so-called low cost carriers and passenger charters.

\(^5\) Podaci Ministarstva mora, prometa i infrastrukture.
\(^6\) Glavno poštansko logističko središte Zračna luka Zagreb, 2008.
The third strategic guideline is *construction of modern infrastructure* which is intended to be accomplished through Zagreb Airport Cargo City project.

### 6. CONCLUSION

Transportation of cargo by air contributes significantly to the global economy and is a key indicator of its efficiency, since the value of the goods transported by air amounts to 35% of the total cargo traffic, which represents an amount of approximately $60 billion annually and provides 32 million workplaces worldwide, despite its modest share in physical cargo traffic.\(^\text{11}\) Therefore air cargo traffic presents a significant component in the distribution chain.

In the mid 80-ies of 20th century Croatia achieved only about 1‰ of global cargo turnover, and by the year 2010, this portion decreased to about 0.1‰.\(^\text{12}\) During the period from 1996 to 2010, ZLZ generated an average 85.38% of the annual Croatian air cargo traffic.

These shares could increase within the next period, but for that to happen appropriate organizational, technological and infrastructural prerequisites are needed. In order to create infrastructural prerequisites Zagreb Airport Cargo City project has been started, and it applies to the construction of storage facilities and other buildings, access roads, operational surfaces, business and other premises, parking lots for cars and trucks, as well as connections to the highway and railway line. Including ZLZ from the point of cargo traffic in intermodal transportation system, where at the role of other compatible projects is also considered, would create preconditions for the repositioning of ZLZ and Croatia at the Southeast Europe air cargo market. Air Cargo traffic is an essential structural element of every serious intermodal transportation system.

### 7. REFERENCES

4. EUROSTAT.
10. Operativni program „Promet“, Ministarstvo mora, prometa i infrastrukture, Zagreb, 2011

\(^{11}\) Dana by IATA.
\(^{12}\) EUROSTAT.
14. Zakon o izmjenama i dopunama Zakona o zračnim lukama, N.N. 14/11.