

# Future of the Inland Waterway Transport

## *Budućnost prijevoza unutarnjim plovnim putevima*

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### Summary

The paper is concerned with the inland waterway transport in the Czech Republic, which has been considerably stagnating since the 90's of the last century. The unfavorable development of the waterway transport has an adverse influence on the development of transport companies, shipbuilding industry and, last but not least, the national economy. In future, the waterway transport can play an important role especially in transporting the energy sources.

### Sažetak

Uradu se govori o prijevozu unutarnjim plovnim putevima u Republici Češkoj, koji je značajno stagnirao od 90-ih godina prošloga stoljeća. Nepovoljan razvoj prijevoza vodenim putem ima značajan utjecaj na razvoj prometnih poduzeća, brodograđevnu industriju i, konačno, na nacionalnu ekonomiju. U budućnosti prijevoz vodenim putem može imati važnu ulogu, posebice u prijevozu izvora energije.

### KEY WORDS

waterway transport  
traffic volume  
transport performance  
classification of inland waterways

### KLJUČNE RIJEČI

prijevoz vodenim putem  
količina prometa  
prijevoz  
klasifikacija unutarnjih plovnih puteva

## 1. INTRODUCTION / Uvod

In the Czech Republic, the waterway transport is operated especially on the Elbe and Vltava rivers with a total length of 315.2 km, of which 109.3 km is of the Va category according to the classification of the inland waterways (see Figure No. 1). The transport has a long tradition on these waterways. With respect to the reduction in transport performances, also the number of pushers and tugs declines. In 2015, their number was 78, which is a 16 % reduction as compared with 2010 (-15 vessels). [1]

## 2. WATERBORNE TRANSPORT ON THE ELBE /

### *Prijevoz vodenim putem na Elbi*

The German federal ministries of the transportation and of the environment signed the memorandum of understanding more than 10 years ago. It stipulates for the fairway on the Elbe the necessity of ensuring the depth of 1.60 m as per G1W<sup>1</sup> for 345 days in a year to Dresden and of 1.50 m above Dresden, i.e. in the direction towards the Czech Republic. The German Federal Ministry of Transportation now wants to hear nothing about this memorandum and transfers the issue of inland waterway transport, including the ports, to the relevant regions. "Building preconditions, especially with respect to the future navigable depths on the Elbe River, is counterproductive," told Alexander Dobrindt, the Federal Minister of Transportation, with two members of the Bundestag in his statement for the Federal

Association of the German Inland Waterway e.V. [2-3.8]

The Elbe between the Czech and German border and Hamburg connects the economic centers of the Czech Republic, Saxony, Saxony-Anhalt, Lower Saxony, Brandenburg and Berlin with the Hamburg port and the west-German inland water network. For the sake of floods on the Elbe river it was decided in 2002 to abandon, despite the scientifically proven high efficiency of the waterborne transport, the next measures and to restore only the condition before flooding on the Elbe, as stated in the memorandum above. The lower navigable depth of 1.50 m above Dresden limits the cross-border traffic with the Czech Republic. The presently determined navigable depths do not correspond to the set goals.

The Table 1 makes it clear that the inland waterway transport shows a moderate reduction of the transport performance, as, for example, in Germany by 6.5 % as compared to 2005 or in Austria by 8 %. For the Czech Republic, it is a dramatic drop by 47 %. Only Belgium and the Netherlands show the increase. [3-5.8]

The inland waterway transport pursuant to Table 2 shows the reduction in transport performances in some countries as compared with 2005, e.g. in Germany by 13 % and in Poland by 13.5 %. The Czech Republic also suffers from a considerable reduction of 47 %. [4-5.8-14]

<sup>1</sup> The values related to the balanced water level (G1W). G1W is a water level which is identical for the river stretch and the canalized stretch. It represents the low water level which is under the long-term average for twenty days in a year without ice on the relevant indicative level.

Table 1 Traffic volume of the inland waterway transport (in thousand tonnes)  
 Tablica 1. Količina prometa u prijevozu unutarnjim plovnim putevima (u tisućama tona)

	2005	2010	2012	2013	2014	2015
Belgium	160.397	161.594	190.288	187.404	190.303	188.158
Bulgaria	5.270	18.372	16.378	16.726	16.922	17.201
Czech Republic	1.610	833	838	608	802	850
Germany	236.765	229.607	223.170	226.864	228.489	221.369
France	68.347	72/632	68.568	68.721	65.345	63.003
Croatia		6.928	5.934	5.823	5.377	6.642
Luxembourg	10.377	10.467	8.506	8.987	8.390	7.106
Poland	8.413	9.952	8.135	7.857	7.825	8.163
The Netherlands	317.639	346.901	350.069	356.062	366.626	359.898
Austria	9.336	11.052	10.714	10.710	10.122	8.599
Poland	7.166	2.820	2.574	3.185	5.899	5.036
Romania	32.827	32.088	27.946	26.858	27.834	30.020
Slovakia	2.351	10.103	8.242	8.107	7.010	5.721

Source: www.eurostat.eu

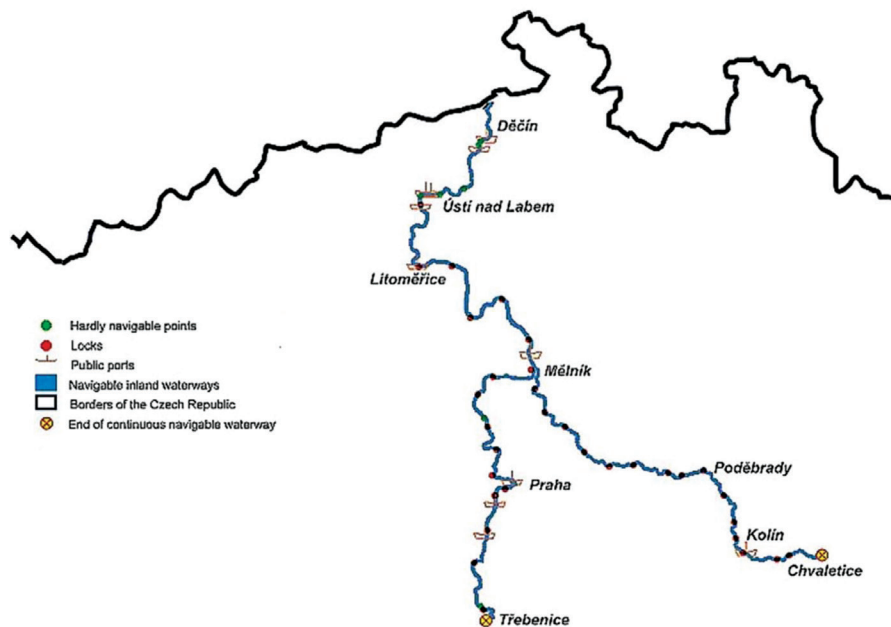


Figure 1 Waterways in the Czech Republic  
 Slika 1 Plovni putevi u Republici Češkoj

Source: www.mdcrcz

Table 2 Traffic volume of the inland waterway transport (in million tkms)  
 Tablica 2. Količina prometa u prijevozu unutarnjim plovnim putevima (u milijunima tkms)

	2005	2010	2012	2013	2014	2015
Belgium	8.566	9.070	10.420	10.365	10.451	10.426
Bulgaria	757	6.048	5.349	5.374	5.074	5.595
Czech Republic	63	43	38	25	27	33
Germany	64.096	62.278	58.488	60.070	59.093	55.315
France	8.905	9.445	8.905	9.201	8.789	8.506
Croatia		940	772	771	716	879
Luxembourg	342	359	290	313	285	235
Poland	2.110	2.393	1.982	1.924	1.811	1.824
The Netherlands	42.225	46.517	47.535	48.641	49.327	48.535
Austria	1.753	2.375	2.191	2.353	2.177	1.806
Poland	327	130	131	91	110	88
Romania	8.435	14.317	12.520	12.242	11.760	13.168
Slovakia	88	1.189	986	1.006	905	741

Source: www.eurostat.eu

### 3. CLASSIFICATION OF INLAND WATERWAYS / *Klasifikacija unutarnjih vodenih puteva*

Categorization of the inland waterways is used for distinguishing individual waterways as per the maximum dimensions of the vessel or the formation of vessels for which the waterway provides the conditions for save and fluent operation. This classification divides the European waterways into the main classes marked with the Roman numerals I to VII, defines the minimum and target parameters of the floating structures, the minimum clearance of bridges and the recommended draught for a given class. During the future reconstructions of waterways of the given category the target parameters should always be reached. The small waterways with the parameters which do not correspond even to the class I were designated as the class 0 waterways.

The Elbe in the Czech Republic territory from Mělník to Wittenberge is classified as Va. This waterway enables floating of the big Rhine ships of the Europaschiff class or a formation of one standard pusher barge of the Europe II type with a tug, with total dimensions of 110 x 11.4 meters and the cargo carrying capacity of up to 208 TEU, or more precisely 1600 up to 3000 tonnes with the draught of 2.5 to 4.5 meters. For ranging the waterway in this category, it is enough if the permitted length of the floating bay is at least 95 m, but with the new or reconstructed waterways of this class its increase to standard 110 meters is required. [2-9]

At present, this category is considered a standard for modernisation of the European navigation network, but if the waterway of this category is to be efficiently used for the container transport, it must enable the transport of containers in 3 layers, which corresponds to the clearance of bridges of at least 7 metres. Therefore, the Vb class is more common in the European network as it requires, apart from the curve radius and the length of locks, the same parameters of the fairway as the Va class. For effective container transport it is suitable already with the clearance of 5.25 thanks to the possibility of dividing the cargo into two subsequent pusher barges. [8-18]

### 4. BENEFITS OF WATER TRANSPORT UTILIZATION / *Koristi od iskorištavanja vodenog transporta*

The application of the water transport in the inland methods of transport does not bring any considerable economic effects as to their costs. Its benefit is especially reduction of the road loading in important regions, such as Prague and Northern Bohemia, when transporting the building materials and the building waste is ensured by the water transport in more gentle way under the comparable conditions. A number of Western European cities already use combined water - road transport for the transport of building materials or waste.

In foreign transport the utilization of the waterway brings the significant savings in the costs of transport as the freight in the water transport is significantly lower than the tariffs of the foreign railways. The water transport is a unique place for transporting abnormal consignments (the dimensions or weight of which exceed the determined conditions for a common transport). In most cases, it is the investment units manufactured by the Czech engineering enterprises. Its transportation using the surface methods of transport is very difficult.

The transportation of goods on the inland waterways reduce the negative impacts on the environment, as substantiated by the study of the PLANCO organization and the Federal Institute for Hydrology for the bulk substrates between Hamburg and Děčín. According to the study, the external costs of the water transport are 3.5times lower than the external costs of the railway transport and 6.3times lower than the external costs of the road transport.

Water transport enables the transportation of heavy and abnormal cargoes which cannot be currently transported on the road or are transportable on the road as the abnormal cargoes at the expense of special costly measures and the excessive wear of the roadbed. It is especially the export of products of the iron works and engineering plants in Ostrava. The water transport is suitable for transportations of strategic raw materials (oil, gas) in higher volume. It also offers lower prices for the transport of agricultural products and supports their suitable export along the network of the European waterways even to the far locations, especially the regions where the ports are situated.

Transferring of a part of the transit road transport to the waterways and railroad will help to reduce the air pollution and in fighting climate change. For the same reason, the Seine-Nord Europe Canal between France and Belgium, is being built now.

The development of the inland waterways promotes the tourism by means of the new tourist and recreational services related to the waterway, such as the passenger transport (boating and yachting, trips in the cabin cruisers), cycling, fishing, camping, bathing, visiting the water works or living on the water. [8-18]

### 5. CONCLUSION / *Zaključak*

The water transport is definitely placed to continue to be one of the most environmentally-friendly modes of long-distance transport which is of a high capacity and, at the same time, cheap. Its importance needs to be increased by necessary investments not only in the waterway but also in the modernisation of the vessels, which is the content of the Water Transport Concept drawn-up by the Ministry of Transport in 2017.

The Hamburg port is of the utmost importance for the Czech Republic's economy as all world export is carried out via this port. Hence, it is very important to build at least one water level on the lower Elbe in the area of the German border to ensure the favorable all-year-round sailing conditions from the Děčín port. We must bear in mind that all the Northern Sea ports, including Hamburg, will have increasingly bigger problems with the availability of the surface transport modes as the capacity of these traffic networks will not be sufficient to meet the growing transport requirements which will be manifested in increasing the charges as the toll and the freight tariffs of the railway transport. This will, of course, be reflected in the price of the exported products, resulting in weakening the competitiveness of our companies. The Elbe waterway is, therefore, very important for us as it has a sufficient capacity and the utilization of this waterway is not and will not be subject to any charges. We are very well aware of the fact that the investments units, such as the abnormal

consignments or the consignments with an eccentrically placed center of gravity or high weight, are transported down the Elbe. In near future, also the agricultural products that are used as alternative energy sources can be transported down the Elbe, too. Finally, it should be noted that Germany is building the railway infrastructure which circumvents the Czech Republic southwards and northwards and designates our territory as the “transport shadow”.

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