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# IMPEDIMENTS TO THE DEVELOPMENT OF UKRAINIAN INLAND WATERWAYS

*The article presents the results of the study aimed at identifying complex problems that hinder the development of Ukrainian river industry and place it beyond the verge of profitability for carriers, thereby reducing the overall competitiveness of transport infrastructure. The existing barriers are grouped by the nature of their origin. A brief description of each obstacle is provided.*

**Keywords:** inland waterways; reforms; river sector; transport infrastructure.

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## ПЕРЕПОНИ РОЗВИТКУ ВНУТРІШНІХ ВОДНИХ ШЛЯХІВ УКРАЇНИ

*У статті наведено результати дослідження щодо виявлення комплексу проблем, які стримують розвиток річкової галузі України та виводять її за межі рентабельності для перевізників, тим самим знижують загальну конкурентоспроможність транспортної інфраструктури. Проведено групування існуючих перепон за природою їх походження. Надано коротку характеристику кожному стримуючому фактору.*

**Ключові слова:** внутрішні водні шляхи; реформування; річкова галузь; транспортна інфраструктура.

*Рис. 1. Літ. 17.*

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## ПРЕГРАДЫ В РАЗВИТИИ ВНУТРЕННИХ ВОДНЫХ ПУТЕЙ УКРАИНЫ

*В статье представлены результаты исследования по выявлению комплекса проблем, которые сдерживают развитие речной отрасли Украины и выводят ее за пределы рентабельности для перевозчиков, тем самым снижая общую конкурентоспособность транспортной инфраструктуры. Предложена классификация существующих преград по природе их происхождения. Предоставлена краткая характеристика каждой из них.*

**Ключевые слова:** внутренние водные пути; реформирование; речная отрасль; транспортная инфраструктура.

**Problem statement.** In today's globalized world comprehensive development of country's economy directly depends on the efficiency of all economic segments, including the transport sector. Ukraine has unique opportunities not only due to its advantageous geographical location, but also because of a strong industrial and transport infrastructure able to provide operations of all types of transport on its territory.

The attitude of most Ukrainian and worldwide leading experts in transportation field, politicians and even common people towards Ukrainian transport infrastructure is characterized by two main "patterns": firstly, Ukraine is a bridge between East and West; secondly – the entire infrastructure, starting from various communication channels and ending with roads, has high degree of depreciation. These so-called two extremes, which are analyzed in a variety of reports are the evidence of the pitiable condition of our country's infrastructure. To date, rail and road infrastructure of Ukraine is operating almost at full capacity, but the capacity of inland waterways

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(IWW) of the country is characterized by low usage. Therefore, the issue of restoration of the actual potential of Ukraine's main arteries is one of the priorities in contemporary economic science and practice.

**Recent publications analysis.** The issue of researching the preconditions for river potential development in Ukraine is covered in the works of many local scientists and economists: O.E. Babyna et al. (2011), B.V. Burkynskyi et al. (2003), Y.Y. Pashchenko (2003), P.I. Pidlisnyi (2003), I.P. Sadlovska (2012), O.G. Topchiev and L.V. Khomych (2006), O.M. Tymoschuk et al. (2015) etc. However, the pressing concern regarding the identification and grouping of problems as to navigable rivers of Ukraine still remains unresolved.

**The aim of the article** is to study the existing obstacles to the development of Ukraine's river industry and to present the classification by the causes.

**Key research findings.** Ukraine's transport infrastructure is often compared to the circulatory system, since its main artery includes rivers running along the entire country. The longest river of Ukraine is Dnipro. On its way to the Black Sea it crosses Chernihiv, Kyiv, Poltava, Kirovohrad, Dnipropetrovsk, Zaporizhzhia and Kherson regions. Up to 90% of the total river shipping is carried by the Dnipro and its major tributaries – Prypiat and Desna. 10% of the river shipping accounts for the Danube and other rivers (the Desna, Dniester, Southern Bug, Seversky Donets, Ingulets, Vorskla etc.) (Sobkevych et al., 2014). The potential of the Danube is used due to the existence of international transport corridor # 7 "Danube (water)" (through Austria, Hungary, former Yugoslavia, Bulgaria, Romania, Moldova, Ukraine). But its potential is not used to its full extent. At the national level the Dnipro can link the center of the country with the Black Sea. Internationally the Dnipro may provide a more optimal distribution of traffic flows of the Central and Eastern Europe towards the Black Sea. In the future, the Dnipro could play an important role in the world and European logistic chains because it is open to foreign vessels.

River shipping is an alternative to any type of transportation in a logistic system or it can be a supplement to an overall supply chain.

Analytical study of transportation in Ukraine shows that transportation by rivers does not enjoy great demand, but it has a great development potential. Unfortunately, technologies used in Ukrainian river transport complex are outdated as well as its regulatory framework dating back to the 1990s. The strategic traffic flows of inland waterways have disappeared or have been refocused. The volume of Ukrainian inland waterway shipping in 2014 amounted to 4.3 mln tons, only 7% if compared to the 1990s. During this time, related companies have significantly reduced the number of employees and some of them were even closed, therefore the income of the state and local budgets have decreased significantly (Ports of Ukraine Journal, 2015).

Among the significant number of the existing problems of Ukrainian navigable rivers, the authors identified, analyzed and grouped the most important ones basing on the nature of their principal detection (Figure 1).

Group 1 – political and economic obstacles:

- Imperfect legislation. River industry of Ukraine has been using its available capacities without adequate support for a long time and it has practically exhausted all of its accumulated reserves. Apart from that, the disinterest of authorities in using the river potential led to the present patiable condition of river transport infrastruc-

ture, and, consequently, to investors' lack of willingness to invest in the industry. Investors cannot understand the legal framework for their investments, since there is no unified law for river transport. It should be noted that the first steps of the government in this direction have already been observed. The Ministry of Infrastructure of Ukraine has developed a draft bill "On Inland Waterway Transport" (04.08.2015), which conveys the basic idea of the revival of Ukrainian inland waterway shipping by means of partial reorientation of freight from railway and road transport to river shipping. According to the forecasts of private companies after this law coming in force attracting new investments Ukrainian river shipping industry will reach 18 mln tons per year by 2020 (Ports of Ukraine Journal, 2015).

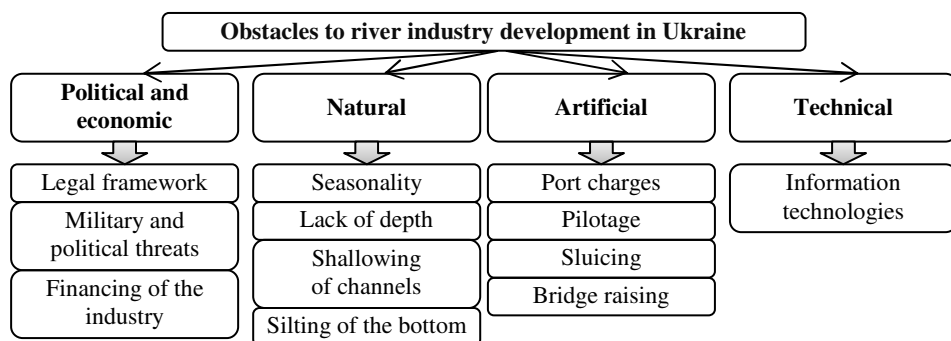


Figure 1. Problems of Ukrainian inland waterways, authors' development

- Political and military threats. Sharp deterioration of the economic situation in Ukraine, which in 2014–2015 was largely caused by stressful transformations of socioeconomic and political environment, as well as by combat deployment in the East and Russia's annexation of Crimea, have underlined the existing imperfections and the exhaustion of traditional factors for economic growth in Ukraine (Sobkevych et al., 2014). These factors impede the reform of the river industry, especially on the implementation of such important projects of the European Commission as: "The Support of Ukraine's Integration with the Trans-European Transport Network" (TEN-T), regional transport project TRASECA, "Logistic Processes and Motorways of the Sea II" (LPMOS) project, and cooperation program "Twinning". The implementation of these EU projects will allow fully use funds intended for reforms and will ensure future operation of Ukrainian IWW.

- Lack of financing. By analyzing the actual state of the repair, operation and maintenance of hydraulic structures of Ukrainian IWW, it should be noted that under current legislation, their maintenance is carried out by and with the help of specially created for this purpose SE "Ukrvodshlyakh." However, in practice, this enterprise chronically lacks funding to implement even basic and most necessary works on maintenance of shipping routes and current repair of gateways. This causes shallowing of main waterways in Ukraine as well as the deterioration of an already catastrophic state of the Dnipro gateways, cumulatively creating traffic jams and the loss of a navigable artery status by the Dnipro (www.ukragrocom, 2014).

According to the draft bill "On Inland Waterway Transport" (04.08.2015) it is expected to establish a single entity – a state institution "The Administration of

Inland Waterways" which will operate on the basis of the existing enterprises that currently maintain IWW.

In the bill submitted for consideration it is stated that "The Administration of Inland Waterways of Ukraine in the manner specified by the central executive body forms and implements the national policy concerning the inland waterway transport, and conducts works as well as provides paid services on contractual terms related to dredging and conducting emergency rescue works, pollution prevention works and mitigation of water pollution of water objects and coastal zone, maintenance and usage of docks, and provides other services not prohibited by the law" (On Inland Waterway Transport, 04.08.2015). It should be noted that the newly established administration will not receive income from providing services to passengers and their transportation, as well as from loading and unloading. Its funding will be implemented by means of target funds' collection for river transportation as well as subsidies from the state budget. Investments for the development of the industry will be received by the Administration under government guarantees.

Group 2 – natural obstacles:

- Shipping seasonality. This problem is a natural specifics of river transport, since in winter some parts of rivers are inaccessible for ships. This reduces the income period for shipping companies and forces them raise the profitability of shipping during the season.

- Lack of guaranteed depth in the area Dneprodzerzhinsk – Zaporizhzhia due to the exhaustion of the Zaporizhzhia reservoir. Lack of depth complicates the issue of goods delivery through this area, and it forces to break the load into small batches and use the ships that require lesser depth, or transport goods partially by land transportat.

- Shallowing of the channel Prirva, which is why there are problems with cargo transportation from the Dnipro river mouth to the Danube through the territory of Ukraine. The inability to move to the channel of the Danube through the territory of Ukraine forces shipping companies use the territories of other countries for these purposes; this requires additional expenses and increases the cost of shipping, which is profitably conducted via the Danube channel (Kachan et al., 2008).

- Silting of the bottom of the Dnipro river. It should be noted that it is important to conduct dredging operations both below and above Kyiv and near Ochakov in order to restore shipping with Belarus and to implement the European initiative concerning the restoration of the river ways E-40, which will connect the Black and the Baltic seas through the corridor "Vistula – Dnipro," and will provide stable growth of transit and shipping, including passenger transportation through the territory of Ukraine (www.ukragrocom, 2014).

Group 3 – artificial obstacles:

- Port charges. Today there is a big discrepancy in the value of cabotage and international voyages leading to inefficient use of light-duty fleet on Ukraine inland waterways. Reducing the tariff pressure and establishing a single fee for river shipping will help unify the existing system of port charges. "On Inland Waterway Transport" (04.08.2015) proposes implementing a single fee for river shipping, which will depend on the volume of cargo or the number of passengers on board and on the distance of shipping on IWW. In addition to that, the fee will be charged in national currency –

for local shipping and in foreign currency for international shipping. This difference in paying a single fee is aimed at the redistribution of some part of cargo inside the country from other types of transport. According to the current Minister of Infrastructure of Ukraine A.M. Pivovarov this fee can be monitored, which makes it ideal for the development of river infrastructure (www.ukragrocom, 2014).

In addition to the aforementioned innovations, the bill introduces the exemption of river vessels with a maximum draft of 4.2 m from the payment of channel fees for the passage of the Dnieper-Bug-Lymansk channel, the Kherson sea channel, deep-water fairway the Danube – Black Sea and the ship and channel fees of marine ports in case of paying the river shipping fee for the current river voyage regardless of what kind of shipping is being carried out – cabotage or international (Interfax-Ukraine, 2015).

- Bridge raising. On Ukrainian IWW there are two functioning drawbridges: Khremenchug and Dnipropetrovsk. Under the existing legislation, according to Art. 99 "Charter of railways of Ukraine", "ship owner must compensate the owner of the bridge the costs of bridge raising on the contractual basis", but this fee is characterized by inflated tariffs (CMU Resolution, 06.04.1998, # 457). Considering the international experience, this problem can be solved by creating a schedule for bridge raising. Passage of these bridges according to the established schedule should be free of charge and only if out of schedule bridge raising is ordered the additional fee is to be charged according to a fixed rate.

- Sluicing. According to the Resolution of The Cabinet of Ministers of Ukraine as of 15.04.2009 # 350, to date sluicing fees are paid by a shipowner, which significantly increases the cost of shipping. In the nearest future it is planned to cancel sluicing fees altogether. The repair of sluices will be conducted at the expense of companies that produce electricity. It is a commonly known fact that the lifetime of Ukrainian sluices is approaching its critical state (70 years). On each of them there are from 12 to 22 technical objects and engineering infrastructure unfit for usage. This situation is a result of underfunding in the last 30 years. According to the information obtained from the leading experts of the river industry, the repairing of sluices will require about 400–450 mln USD in the nearest future. If we divide this amount by the amount of the electricity produced, we get about 8 cents per kilowatt, and if we put these costs on the carrier, the amount will reach – 4.5 USD per ton. (Ports of Ukraine Journal, 2015).

- Pilotage. The fees for vessel pilotage on Ukrainian IWW are unduly high. This entails the blocking of shipping resumption on the Dnipro and other rivers, especially from Kherson to Kyiv and upward, to Belarus. Along with the increasing of a voyage length the pilotage cost per ton of cargo is increasing drastically as well. Pilotage fee should be, if not completely leveled, then minimized by establishing compulsory pilotage only in those areas of inland waterways where the actual danger or need for its usage exists. For example, on the limiting areas between the bridge in Dnepropetrovsk and the bridge in Kremenchuk (www.ukragrocom, 2014).

Group 3 – technical obstacles:

- The use of information technologies. Currently, in Ukrainian ports, both sea and river ones, new information technologies are being slowly integrated into the processes of transportation. Low level of their usage in electronic document manage-

ment systems is a common problem for the entire transport sector of Ukraine, therefore river transport is not unique in this.

One of possible solutions to the existing problem should be the full use of the latest technologies based on advanced mathematical methods and models that will help successfully meet the challenges of logistic supplies, including the use of water transport in the general logistic system, as well as facilitate the development and interoperability of different kinds of transport.

In the process of reforming the river industry of Ukraine, the implementation of the integration principles into a single global information platform should take place by considering the international experience, including that of the world leading ports such as Rotterdam, Hamburg, Singapore etc. Additionally, when developing new information systems at ports, open standards should be used, which in the future will make the connection of information network of a port with external information systems of the world easier. On this basis the simplification of customs and border procedures can occur, as well as the overlapping functions at sea ports will be eliminated.

**Conclusions.** It should be noted that reforms of Ukrainian IWW and all of national infrastructure can take place only under the circumstances of fundamental changes in the current legislation. This industry can become attractive for investments, which is often confirmed by frequent appeals to various officials of leading national and international companies. Such interest shows the willingness to implement large infrastructure projects in river ports that would increase revenue inflows to budgets from investment projects at waterways (including coastal strip). Also there will be new jobs, and new related areas in the river industry will be developed (tourism, water sports), which will bring additional revenues to budgets of all levels.

Further studies by the authors will be aimed at identifying the ways of overcoming the existing obstacles to the development of the river industry in Ukraine and shaping the competitive capacities of the national transport sector.

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