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Svetlana MILOSLAVSKAYA
Moscow State Academy of Water Transport
h. 1, Novodanilovskaya emb. 2, 117105, Moscow, Russia
Elena PLOTNIKOVA*
Vytautas Mugnus University
K. Donelaičio str. 58, 44248, Kaunas, Lithuania
**Corresponding author*. E-mail: alena.plotnick@yandex.ru

CURRENT SITUATION AND OPTIMIZATION OF INLAND WATERWAY INFRASTRUCTURE FINANCING

Summary. This paper explores and summarizes the experience of financing water transport infrastructure of a number of countries with developed network of inland waterways, namely the USA, Russia and Germany. The purpose of the work is to generalize current situation and find ways of optimization of inland waterway transport infrastructure financing. The first part of the paper analyses the state of inland waterways infrastructure. The next part describes the existing financing systems. The last part examines the main problems that hamper the development of the industry and looks for possible ways to solve them.

1. INTRODUCTION

At present, the transport policy of many countries is characterized by a trend of increasing interest in the development of inland waterway transport (IWT). The existing spatial limitations for the development of other land transport modes, as well as consequences of the economic crisis, which made more emphasis on costs and competition, are additional reasons for interest in IWT. It is estimated that in the future the demand for freight traffic will remain positive. So, according to the forecasts, in the period from 2005 to 2020, only in the EU, this growth will be 20% [1]. By 2030, the growth would already have reached 40%, and by 2050, more than 80% [2]. While maintaining the existing share of road transport in the development of cargo flows, the projected growth in traffic should also be accompanied by a corresponding expansion of the infrastructure of this mode of transport. Such a purely extensive path is impossible for financial reasons, as well as increasing the negative impact of vehicles on the environment.

It is IWT with a significant capacity reserve that can change the situation. Already today the industry occupies an important role in the transport sector of many countries. More details will be given to the experience of maintaining water transport infrastructure of such states as the USA, Germany (as a EU country with significant internal waterways) and Russia. Inland waterways are used most intensively, among the countries under consideration, in Germany. Share of IWT in the total freight turnover of this country is almost 10%, which is slightly lower in the USA (Table 1). Among the analyzed states, Russia has the longest inland waterways, but the share of IWT in this country's total freight turnover is the lowest.

Table 1

Performance of IWT in the USA, Russia, the EU and Germany

	USA	Russia	EU-28	Germany
Length of navigable inland waterways, thousands of kilometers	40,2	102,0	42,0	7,7
Cargo transportation IWT, billion tkm	572,3	64,0	150,9	59,1
IWT share in total freight turnover of transport	7.2 %	1.3 %	4.3 %	9.6 %

Source: [3, 4]

2. STATE OF INLAND WATERWAYS INFRASTRUCTURE

One of the key obstacles to realizing IWT potential around the world is the state of infrastructure.

2.1. Germany and EU in general

Germany is one of the most developed countries from the point of view of water transport system. This country is an example of how natural waterways integrated with artificial structures can be used for freight and recreational purposes. The main water transport arteries of Germany are the rivers Rhine and the Danube. In 1992, the Danube was connected to the Rhine by the Rhine-Main-Danube canal.

Today, the Rhine is one of the busiest rivers in the world. The main part of river cargo transportation in Germany falls precisely on this waterway, and this is in spite of the fact that the eastern part of Germany in terms of the density of waterways exceeds the western one. This fact clearly demonstrates direct dependence of the development of industry on the state of infrastructure and dimensions of waterways.

Uneven development of water transport infrastructure is a serious problem for the EU. Inland waterways are available in 21 of the 28 EU member countries. The most noticeable differences are observed in the East and West of the region. Historically, there are states in the eastern part of the EU that joined the EU later than others. These countries have a lower level of economic development, which has had a negative impact on the level of the water transport industry. Insufficient technical equipment, often unfit for modern ways of transportation (for example, intermodal), and presence of "bottlenecks" distinguish waterways of the eastern part of the EU. Thus, the state of the longest network of inland waterways in Europe in the Rhine-Danube basin is significantly different as we move from west to east. Weak development of water transport infrastructure of the eastern part of the EU affects the performance of industry in this region. If in the Rhine basin, about 80% of the total freight traffic by inland waterways of the EU is carried out, then the share of the Danube is only 9% [5]. Moreover, the Danube region itself is also characterized by very large internal differences. It includes both one of the most economically developed countries of the EU and one of the most backward.

2.2. The United States of America

As for the United States, in this country the aging of the infrastructure may become a serious problem for the development of IWT. The United States no longer has the best infrastructure in the world. For example, according to the World Economic Forum, the overall infrastructure of the United States ranks at 12th position. In this indicator, the US is behind countries such as Japan, Germany, the Netherlands, and France [6].

According to the 2017 Infrastructure Report Card, applying the Infrastructure Assessment Scale from A to E, the state of the US transport infrastructure as a whole is estimated at D +. At the same time, the IWT infrastructure is estimated at a lower level - D. [7] Most of the hydraulic structures on the inland waterways of the United States were built in the first half of the twentieth century, while the

service life of infrastructure facilities is usually 50 years and extended to 75 years through the repair and restoration works, which is conducted by the US Army Corps of Engineers. The actual service life of 54% of objects exceeds 50 years, and for 36%, more than 70 years. According to the American Society of Civil Engineers, the average age of all locks in federal ownership located on the inland waterways of the United States is about 60 years [8].

In general, the technical state of the infrastructure is considered as satisfactory [9]; however, due to its significant age, the duration of planned and unplanned termination of passage through the locks increases from year to year (Fig.1).

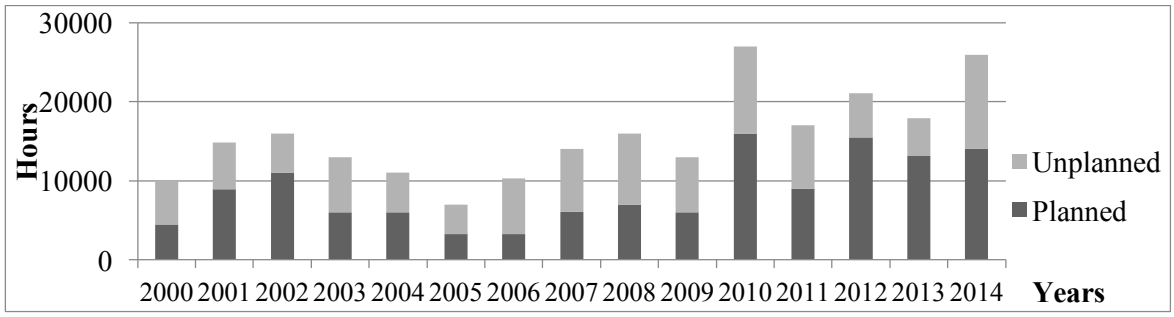


Fig. 1. Duration of planned and unplanned stopping of passage through the locks on inland waterways of the USA

In the period from 2000 to 2014, the average delay time for locks almost doubled from 64 to 121 minutes. In 2014, on the inland waterways of the United States, 49% of vessels experienced delays. [7].

The greatest concern among users of the infrastructure of inland waterways of the United States is the condition of certain parts of the network [10]. Thus, the Upper Mississippi, together with the flowing from the east Illinois River, forms a very important medium for the exporters of agricultural products and, in the first place, grain, a water transport subsystem with a high traffic density of a total length of 1,900 km. There are 28 locks with 34 cameras on this part of the Mississippi, and 7 locks on the Illinois River. Locks on the river Illinois were built more than 80 years ago. On the upper Mississippi, the oldest (lock No. 14) was built in 1922, 23 locks of 28 available were built in the 1930s - early 1940s, 3 locks - in the 1950s - early 1960s and only 1 lock (Melvin Price) in the 1990s.

2.3. The Russian Federation

On analyzing the situation in Russia, it can be concluded that potential of the IWT in this country is largely underutilized due to a number of serious problems that have occurred in the industry. More than half of fixed IWT assets of Russia are physically and morally outdated and, therefore, require replacement or reconstruction. Worn-out of the entire complex of technical means of navigation and its provision is observed. In the period from 2008, the ongoing complex of measures to improve the technical condition of navigable hydraulic structures allowed to increase the number of facilities with a normal level of safety and to reduce the number of facilities with unsatisfactory and dangerous levels. Nevertheless, experts note that the pace of improvement of the technical condition of navigable hydraulic structures is still slow. At present, only 87 facilities (which constitute only 25.8% of the total number of facilities subject to declaration of safety) have a normal level of safety [11].

With regard to the total length of navigable inland waterways, this figure reached its highest value in the mid-1970s (Fig. 2), after which, until 2000, there was a decline. Later, the trend was reversed, but after 2005 the length of navigable inland waterways remained practically unchanged.

The issue of significant deterioration (over the past decades) of qualitative parameters of the Russian Federation's inland waterways remains unresolved. Only 1/3 of inland waterways retained the values of the guaranteed dimensions of the ship's fairways at the 1991 level. Losses in the carrying

capacity of the particular sections of inland waterways due to decrease in the qualitative indicators of the ship's fairways amount to more than half of the achieved volume of the total traffic [11].

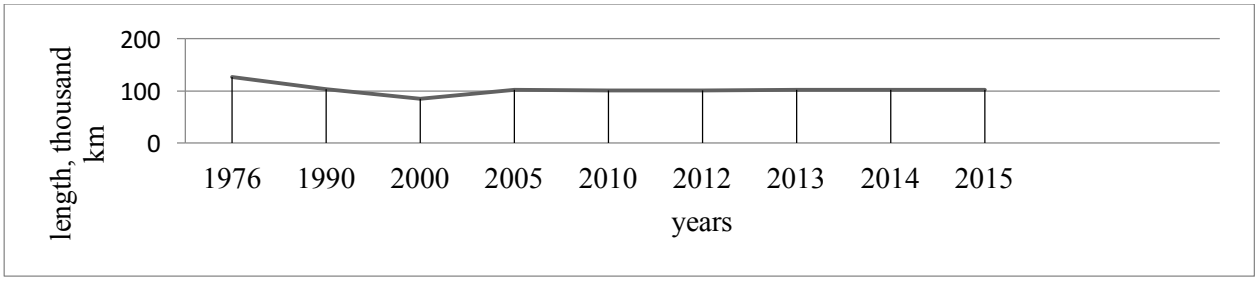


Fig. 2. Length of navigable inland waterways of the Russian Federation
Source: [12, 4]

Of particular concern is the state of the Unified Deep-Water System of the European part of Russia, which is the backbone of the country's water transport system, where the length of the parts with depths less than 4 meters is about 25% [11]. Due to insufficient depths on certain routes, in some cases it is necessary to partially pause ships. Naturally, this reduces the commercial efficiency of fleet operation. Positive moment is the commissioning in 2008 of the second line of the lock of the Kochetovsky Hydrosystem, which significantly shortened the time of passage of the ships through the locks and made it possible to put into operating the ships of a new generation. However, the situation when ship owners suffer losses of the fleet's carrying capacity due to underloading of ships because of insufficient depths, as well as due to excessive shutdowns, in anticipation of a queue for passage through the locks, still remains on a number of other sections of inland waterways and is unacceptable.

3. SYSTEM OF WATER TRANSPORT INFRASTRUCTURE FINANCING

It can be concluded that updating the infrastructure is a necessary measure for the further development of IWT in all regions under consideration. Competent policy in the sphere of financing water transport infrastructure facilities can improve the condition of the fixed assets of the industry. Financing of transport is a serious problem in funding shortfall. As far as transport has strategic importance for every country and because of its capital-intensive nature state, funding is needed for the construction and operation of transport infrastructure.

Thus, in accordance with the law of the Federal Republic of Germany, the federal government is national authority responsible for the construction and maintenance of transport infrastructure. [13]

The system of financing inland waterways of the USA fixes in full the state funding of technical maintenance and repairs, as well as 50% of the cost of construction and modernization of hydraulic structures [14]. The costs of maintaining of inland waterways infrastructure are fully within the responsibility of the federal budget. A significant role in financing IWT in the US is also played by the budgets of the states and local governments.

According to the Code of IWT of the Russian Federation, maintenance of the network of inland waterways of Russia and the navigable hydraulic structures located there is carried out by the administrations of the basins of inland waterways at the expense of the federal budget [15].

It is necessary to elaborate on the system of financing inland waterways in each of the countries under consideration.

3.1. Germany

Transport policy in Germany is carried out in accordance with the 10-15 year forecast of the development of transport industry. On its basis, the Ministry of Transport develops a five-year investment plan (Investitionsrahmenplan - IRP). This practice has been applied in the country since

1973. Investment plan is the basis for financing transport sector projects. The process of determining investment priorities depends on the current economic situation. For example, distribution of investments according to the IRP for 2011-2015 by transport sectors implies the use of half the funds for the development of road transport and 41% for rail transport. Water transport sector is traditionally financed in a smaller amount – 9% of the total amount of allocated funds [16].

In financing maintenance and development of the water transport infrastructure of Germany (as well as other EU countries), the main share is made up of state budget funds. However, the amount allocated by governments is not enough to keep the industry up to the mark, as a result of which it is necessary to resort to using additional sources of financing for the sector (Fig. 3).

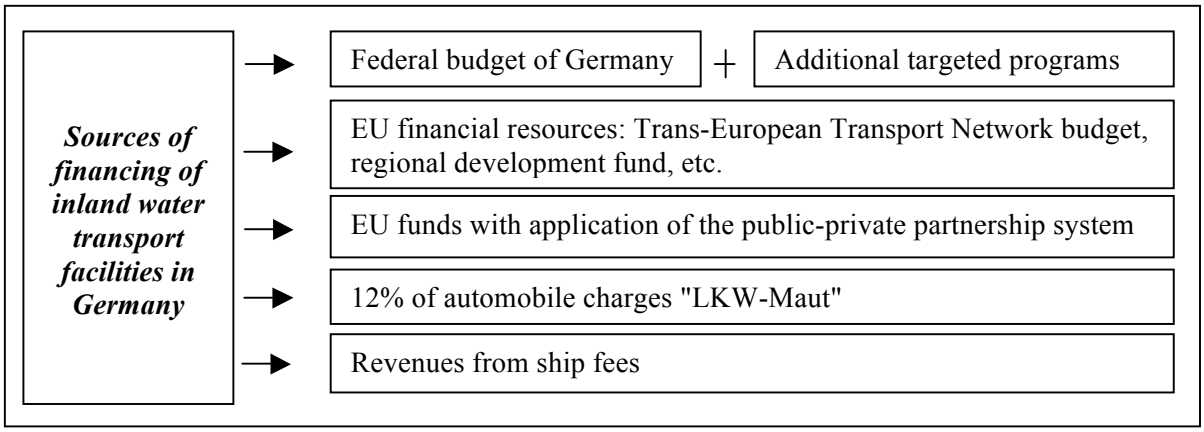


Fig. 3. Sources of financing of inland water transport facilities in Germany

So, within the framework of the additional targeted program for the acceleration of infrastructure projects (Infrastrukturbeschleunigungsprogramm - IBP) for expansion and modernization of infrastructure in Germany in 2013-2014, additional 750 million euro were allocated from the budget, of which about 19% was spent on the implementation of water transport projects [16].

An additional source of financing for the development of Germany's transport infrastructure is the financial resources of the EU. From the EU funds in the period 2007-2013 Germany was allocated 1.52 billion euro, of which only 91 million euro (6%) was intended for the development of inland waterway transport [16].

Using the practice of public-private partnership (PPP) is another way of financing water transport projects. PPP in the future should become a full-fledged alternative to the "classical" models for the implementation of socially significant projects.

Since 2004, an additional source of financing for German IWT has been a portion of the revenue collected from trucks with mass of 12 tons or more, both empty and loaded, taxed by road tolls "LKW-Maut" ("Maut" is a German word derived from the language of ancient Goths, means duty, customs duty), which is charged based on the mileage passed along federal roads in Germany. According to the revenue-sharing rule, 50% is allocated to motor roads, 38% - rail transport and 12% to inland waterways [16].

Of the fees collected on the territory of Germany and related to water transport, it is worth noting the shipping fee - about 80 million euro per year and the annual collection of trade union's fee of recreational and sports organizations in the amount of 51 thousand euro. However, incomes from existing fees are very small and cover only 5% of the cost of maintaining inland waterways [16].

3.2. The United States of America

As for the United States, in this country it is legally established procedure provided maintenance and repair of hydraulic structures for inland waterways from the targeted state appropriations allocated to the U.S. Army Corps of Engineers - Corps. This approach is fixed in the Water Resources

Development Act of 1986 (WRDA 1986). With regard to new construction, modernization and reconstruction, in accordance with the mentioned law, only half of the costs are covered from the state budget, and the second half - from the special Inland Waterways Trust Fund.

The trust fund was established in 1978 in accordance with the provisions of The Inland Waterways Revenue Act (1978 Revenue Act). This is an investment fund, formed with a tax on fuel used in commercial transportation on inland waterways, which is paid by shipping companies when bunkering pushers and tugboats. It was statutorily defined that taxes are collected not from the whole network, but from 26 specific segments determined by the law with a total length of 17.7 thousand km (11 thousand miles) with 171 locks with 207 cameras located on them. According to the law, it is only these segments that were eligible for construction and rehabilitation expenditures from the trust fund in the future. The fund invests collected taxes in interest-bearing bonds, therefore the total income of the fund is formed from tax revenues and interest on bonds.

Taxes began to accumulate in the trust fund starting from 1980. Over the entire history of the trust fund, the increase in the fuel tax in comparable prices was more than 3 times, from 0.09 Dollars / gallon in 1980 to 0.29 Dollars / gallon after 31.03.2015 [9]. During the first six years, the collected taxes only accumulated in the trust fund, but none of the projects for new construction, modernization or reconstruction received financing from its funds, since the Inland Waterways Revenue Act directly stated that no expenditures from the trust fund could be made unless the law authorizing the expenditure explicitly provides that the appropriation is to be made out of the trust fund. Such normative act was mentioned above (WRDA 1986), which actually reaffirmed the goals for which the fund had been created, established a "formula" for distribution of expenditures between the state and non-budget sources, and added a section of the Tennessee-Tombigbi waterway to the list of waterways from which the fuel tax is collected.

Thus, by the time of the adoption of this law, the trust fund had 260 million dollars. The amount of the annual tax on fuel in the trust fund directly depends on the volume of river traffic. Its greatest value was observed in 2001. A year later, the maximum amount of resources in the trust fund was recorded. By 2015 the size of the trust fund has decreased almost 8 times (Table 2).

Table 2

Financing of the trust fund, million dollars

Year	Outlays	Revenues received	%% on deposits	Incomes + %% on deposits	Balance at the end of the year
1987	24,50	48,30	16,50	64,80	300,60
1995	94,80	103,40	13,30	116,70	242,10
2000	102,38	99,58	19,96	119,54	387,79
2001	110,22	112,68	20,90	133,58	411,15
2002	104,49	95,28	12,40	107,68	412,64
2005	136,32	91,29	7,66	98,95	352,60
2010	50,13	73,95	0,15	74,10	38,21
2011	90,32	83,95	0,05	84,00	31,90
2012	88,70	89,20	0,04	89,24	45,90
2013	87,27	75,11	0,04	75,15	33,82
2014	97,87	81,73	0,02	81,75	24,66
2015	68,34	97,89	0,01	97,90	54,22

The financial position of the trust fund, since 2003, has sharply worsened, as the significant resources of the fund, including the savings accumulated over the past years, were actively directed to modernize the rapidly aging inland waterways infrastructure in those years. In addition, the cost of a number of projects significantly exceeded the original estimates. As a result, starting from 2009, the annual expenses from the fund did not exceed the revenues for the corresponding year, which

prevented the work on upgrading the infrastructure and new construction. In order to continue the implementation of the projects, the US Government released in 2009 the fund from making its share in the total amount of financing according to the formula of 50:50 and took all costs. In addition, given the deterioration in the economic situation due to the economic crisis and according to the American Recovery and Reinvestment Act of 2009, a number of projects for the construction and major rehabilitation on inland waterways were also carried out without the participation of the resources of the trust fund. In the future, another deviation was made from the legislatively approved "formula" of financing: according to the Water Resources Reform and Development Act of 2014, the share of the federal budget is 85% in the construction of the Olmsted locks and dam, on the Ohio River, while the share of the trust fund is only 15%. Consequently, the state in difficult economic conditions once again took on a greater burden than the private sector [9].

During the whole period of existence of the trust fund, 25 projects have been implemented, for which approximately $ 3 billion was spent out of the funds of the trust fund and the same amount from the federal budget, i.e., in total, 6 billion dollars. At the moment, there is a shortage of funds needed to invest in projects on inland waterways. So, in 2015, the fund, including taxes and interest on deposits, amounted to only $ 54 million.

3.3. The Russian Federation

Implementation of the necessary measures that can improve condition of the fixed assets of the IWT in Russia is also associated with significant capital investments and requires the government to work seriously to find the necessary resources for this. The main objectives of the further development of the industry and the plan of measures for their achievement in the long term are reflected in the "Strategy for the development of inland water transport of the Russian Federation for the period until 2030". Implementation of the measures outlined in the Strategy is possible provided that a stable and reliable financing system is established, which will be provided by the federal budget funding, the budgets of the subjects of the Russian Federation and local budgets, as well as non-budget sources. Moreover, according to the draft of the Strategy, the main share of expenditures falls on the federal budget (this figure ranges from 51.9% to 58.7% [17] depending on the scenario chosen: innovative or conservative), then in Adopted by the Decree of the Government of the Russian Federation No. 327-p of February 29, 2016, based on an innovative scenario of development, most of the funds intended for the development of IWT are already planned to be drawn from non-budget sources (Fig. 4a-b), which will ensure significant savings in budget expenditures.

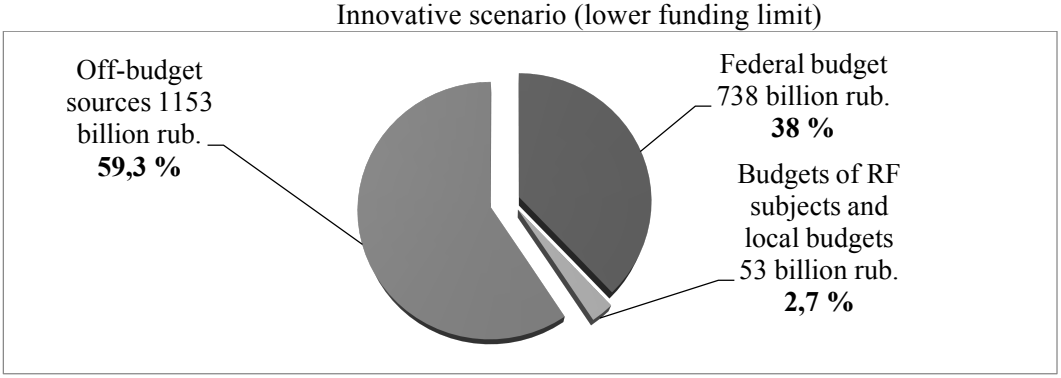


Fig. 4a. The structure of financing IWT according to the "Strategy for the development of inland water transport of the Russian Federation for the period 2012-2030"
Source: [11]

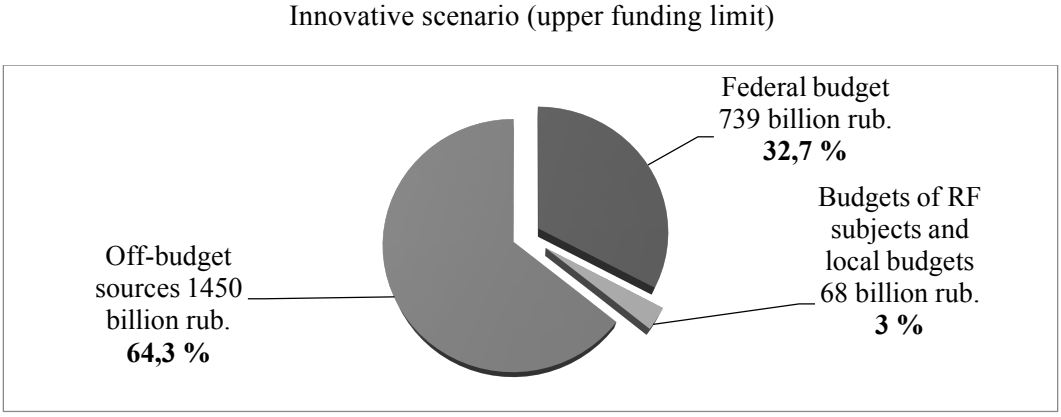


Fig. 4b. The structure of financing IWT according to the "Strategy for the development of inland water transport of the Russian Federation for the period 2012-2030"
Source: [11]

It is worth noting that today in Russia there is a system in which a significant amount of off-budget funds in IWT industry is usually directed to the construction of a commercial fleet. The reason for this was the practice, established since the beginning of the 1990s, when the state practically stopped providing transport services (this became the prerogative of the private sector), and since then has performed only regulatory functions and obligations to maintain the water transport infrastructure in proper condition. As for the IWT infrastructure, which includes inland waterways and shipping and port hydraulic structures located on them, facilities of the engineering, technical and technological complex that ensure the safety of navigation, as well as transportation of goods and passengers, its financing is mainly carried out at the expense of budgetary funds.

However, the adopted strategy expands the regular field of application of off-budget funds. Now, under the terms of PPP, they are planned to be used also for the construction and reconstruction of the infrastructure of inland waterways. Thus, out of the 10 major investment infrastructure water transport projects planned by the Strategy, one project is expected to be implemented using the PPP mechanism. This project implies the construction of the second lock line of the Volga-Don waterway and is extremely important for the preservation of the integrity of the Unified Deep Water System. The cost of the project is 37 billion rubles, which is a fifth (20.7%) of the amount of expenses planned for all major investment projects implemented within the framework of the Strategy. Implementation of this project on the basis of the PPP principle is extremely important not only from the point of view of implementing this particular project, but also because it creates a precedent that allows using PPP mechanism in implementing investment projects for IWT in the future.

3.4. The People's Republic of China

The tendency to increase the number of PPP projects is observed not only in the countries discussed above, but also, for example, in the People's Republic of China (PRC) – a country that has the world's longest inland waterway system (126300 km).

Over the past decades, the PRC transport sector has developed at a rapid pace. At the same time, investments in transport of the PRC were mainly aimed at the development of auto and railways.
In 2007, China adopted a long-term National Plan for Inland Waterways and Ports - until 2020. This is an ambitious plan for modernization of the sector, the program with the highest level of costs in the water transport infrastructure in the history of China. It is planned that the ways of the 'high class' (class III and higher) to 2020 will be about 19000 km compared with less than 9000 km in 2006. [18]

However, lack of financial resources can prevent implementation of the program in full. Actual achievement of the targets is significantly behind the forecasted aims.

The burden of financing infrastructure investment in China is generally shared between the central government, local governments, and the private sector. The Chinese Ministry of Finance has been increasingly promoting infrastructure investment via PPPs. [19]

PPPs have been developing in China since the very late 1980s, but the year 2013 has become a landmark year in this development. Third Plenum of the 18th Communist Party of China, held in November 2013, emphasized the decisive role that market forces should play in the Chinese economy. Following Party's actions confirmed this direction, particularly as it concerned PPPs, resulting in many associated circulars, regulations, declarations and debates.[20]

Compared with traditional financing, financing infrastructure via PPPs includes the following benefits:

1. Involving private-sector financing can ease public-sector debt and expenditure burdens.
2. Since 1994, local governments have been forbidden to borrow money directly. Local government financing vehicles collected funding mainly through loans contracted with banks (more than 80 % of the funding) and also through the issuance of bonds. However, much of these debt and guarantees remained off the local governments' balance sheets. After the financial crisis of 2008 local debt (on and off the balance sheets) reached alarming levels. In 2013, a national audit concluded that local governments owed CNY 17.9 trillion, about one-third of China's GDP (National Audit Office of the People's Republic of China, 2013). [20]
3. Financing of private-sector via PPPs can act as a catalyst for the development of domestic financial markets.
4. Infrastructure PPP projects usually have shorter project cycles due to more specialized, experienced and skilled staff, that private sector makes more active, as it is directly interested in rapid implementation of the project.
5. PPPs may bring better quality and lower service costs because of the competitive managerial skills in the private sector.
6. The mere fact of investing in large infrastructure systems and purchase of construction materials can stimulate broader economic activity.

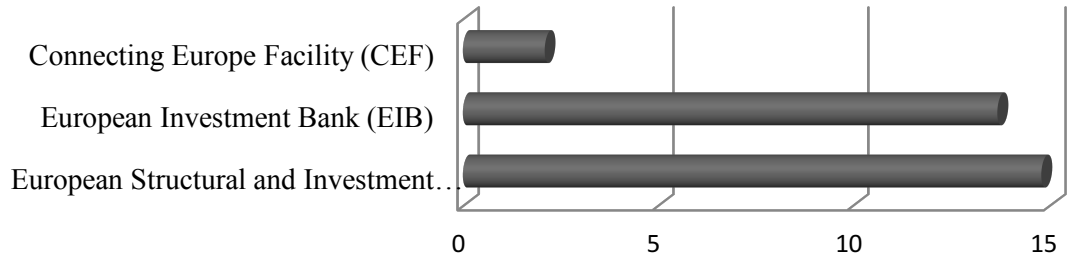
4. PROBLEMS AND PROSPECTS OF INLAND WATERWAYS DEVELOPMENT

Analysis of practices of financing water transport infrastructure facilities of major world economic centers showed a number of similar problems impeding the development of the industry. The main one is the limited financial resources necessary for the further development and improvement of the infrastructure of inland waterways.

4.1. Germany (European Union)

The distinctive feature of the Member States of the European Union is the possibility of financial support from the EU. Typically, such financial support from the EU is available for investment projects of common interest and EU added value.

In the course of 2014 and 2015, the total investment made by the EU institutions from their financial sources in TEN-T core and comprehensive network infrastructure amounted to almost EUR 31 billion in all 28 Member States (Fig. 5).



	European Structural and Investment Funds (ESIF)*	European Investment Bank (EIB)	Connecting Europe Facility (CEF)
billion euro	14,8	13,7	2,1

*European Regional Development Fund (ERDF) and the Cohesion Fund (CF)

Fig. 5. Co-financing from the EU budget for investments made on the TEN-T network infrastructure in 2014-2015 (in Billion EUR)
Source: [21]

It should be noted that despite the high EU financial contributions to transport infrastructure on the TEN-T network, the main financing challenge still rests with the Member States [22]. To benefit from EU funds, the Member States allocate considerable national budgetary resources. For example, in 2014 and 2015, EUR 2.1 billion invested from CEF/TEN-T budget were co-financed with more than EUR 6 billion of investments from other sources, primarily Member States' national budgets [21].

Analysis of distribution of EU financial grant funds support for the development of the TEN-T network by type of transport (Table 3) allows us to state that the investment level in IWT was very low and amounted to only 1.1% of total investments made on TEN-T [21].

Table 3

EU expenditure on TEN-T per funding source by transport mode in 2014-2015 in Million EUR

Transport Mode	TEN-T/CEF	ERDF+CF expenditures	Total
Air	167.4	764.4	931.8
Inland Waterways	**115.9**	**72.8**	**188.7**
Multimodal	72.8	284.1	356.9
Maritime	202.8	1,352.2	1,555.0
Rail	1,506.0	7,244.7	8,750.7
Road	75.5	5,121.4	5,196.9
Total	**2,140.4**	**14,839.6**	**16,980.00**

Thus, even in Germany, despite the fact that the technical condition of IWT infrastructure is at a high level, the allocated amount of funds does not allow to develop actively the industry. The development of sustainable and sufficient sources of financing (both public and private) is of key importance to overcome the deficit of funding presently available. Private funding often builds on public-private partnership schemes [23]. In this case, EU funds can be used to improve the risk profiles and strengthen the contractual arrangements of PPPs, thereby increasing their marketability. This will allow the promoters of eligible infrastructure projects to attract additional private finance from institutional investors such as insurance companies and pension funds.

4.2. The United States of America

In the United States, according to the Capital Investment Strategy on inland waterways, developed in 2010 ("Strategy 2010") [24], the total demand of river basins for new construction, reconstruction, modernization and major rehabilitation of the facilities located on them from 2011 to 2030, i.e. for a twenty-year period, is 18 billion dollars, including $ 12.1 billion. (67%) – costs for of new construction – and about $ 5.9 billion. (33%) - major rehabilitation, or 900 million dollars annually. This is the desired amount of investment, not supported by real financing. A more detailed study of these proposals, carried out by experts, made it possible to identify priority projects for new construction and major rehabilitation and recommend them in the Capital Investment Program for IWT, linking its realization with the financial capabilities of the state budget and the resources of the trust fund. As a result, 11 projects of new construction and 20 projects of major rehabilitation and modernization totaling $ 7.6 billion or $ 380 million annually were included in the mentioned Program. [24]

Since the program's resource supply is unstable and depends on the receipts in the trust fund, budgetary authority for the Corps and the annual allocations to the Corps from the federal budget, the order, terms of implementation of the projects contained in the program and their cost had to be reconsidered. So, in 2016, in accordance with The Water Resources Reform and Development Act mentioned above, a new Capital Investment Strategy (Strategy 2016) for inland navigation construction throughout 20 years until 2036 was developed. It is assumed that the adopted long-term investment program will absorb the "Strategy 2010" and will allow to improve the condition of the water transport infrastructure in all river basins, as well as effectively use the budgetary and non-budgetary investment resources aimed at its implementation. As stated in the Law, it is planned to annually analyze the implementation of the Strategy and, if necessary, to make changes to it. The most detailed projects are implemented from 2016 to 2021. As for projects scheduled from 2022 to 2036, they are denoted as potentially possible. In addition to the projects for the construction of new hydraulic structures (locks, dams, canals), a number of facilities are planned to have major rehabilitation within the same period. In accordance with the baseline scenario for the implementation of the "Strategy 2016" for 20 years, to the entire program will be directed $ 4.9 billion or a maximum of $ 250 million annually, with an average annual balance of the trust fund at the level of $ 240 million.

In order to overcome trust fund deficit, starting from 2017, the government made a proposal to collect fees from users of inland waterways. This proposal of the government is justified by the fact that recently a number of external factors in the formation of the state budget have changed. If earlier the amount of investments in the industry was limited to the resources of the trust fund, at the present time such allocation is made from the federal budget [9]. It is expected that with the preservation of the established procedure for financing projects in the ratio of 50:50 and simultaneously reducing its participation in financing repair works at water transport infrastructure facilities to 25%, taking into account the introduction of fees from users of inland waterways, the revenues of the trust fund should significantly increase. This will allow implementing new investment projects.

4.3. The Russian Federation

Comparison of actually spent resources and necessary volume of normative funding for the maintenance of inland waterways of the Russian Federation also indicates that the industry is underfinanced (Fig. 6).

At the Presidium of the State Council on the development of inland waterways meeting held in 2016, chaired by the President of Russia, key issues concerning the attraction of funds for the development of IWT were discussed. The proposal to introduce a fee for the use of infrastructure was also discussed, which could become one of the measures to attract additional funds to its development. It is worth noting that unlike the United States or Russia today, introduction of a waterway fee is impossible in most European countries without changing existing conventions. For example, the Mannheim Convention on the Navigation of the Rhine of 1868, which covers almost three-quarters of

the EU's water transport operations, and 1948 Belgrade Convention (9% of IWT's traffic in the EU) prohibit the signatories of these agreements from charging navigation fees.

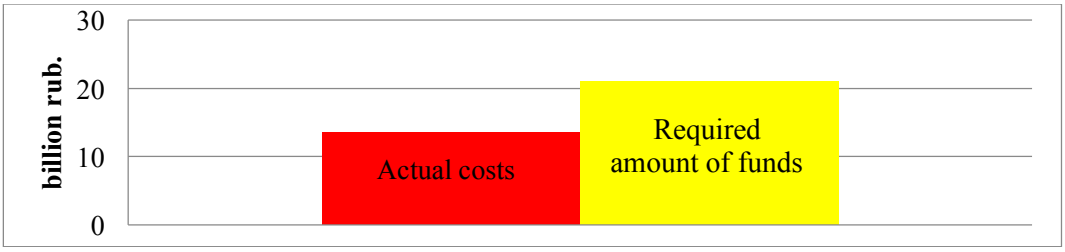


Fig. 6. Comparison of actually spent funds and necessary volume of regulatory funding for the maintenance of inland waterways of the Russian Federation

Attempts were made to introduce appropriate amendments to the conventions to change the current situation. In particular, according to the report of the Federal Union of German Industry (Bundesverband der Deutschen Binnenschiffhart), negotiations were held with participants of the Mannheim Convention, that is, countries that in 1868 established freedom of navigation on the Rhine River and its main inflows. Negotiations were unsuccessful. The Netherlands government expressed strong opposition to the introduction of charges on inland waterways.

Despite the existing disagreements, supporters of the charges believe that introduction of fees is an inevitable process that will affect all ways of transportation and inland waterway is no exception.

5. CONCLUSION

In recent decades, different countries of the world have faced the problem of congestion of land transport modes. In this regard, more and more attention is paid to inland waterway transport, which has significant unused potential. It is also important that inland waterway transport, in comparison with alternative modes of transport, has such advantages as low cost of transportation, reliability, and environmental friendliness. Analysis of practices of financing water transport infrastructure showed the presence of a number of similar problems impeding the development of the industry in all regions under consideration. The main one is the lack of financing. The development of IWT in general is carried out in the conditions of shortage of financial resources. The industry needs investments. Unsatisfactory condition of fixed assets leads to a decrease in the potential of IWT, affecting stability and efficiency of the industry. Global practice is the active participation of the state in the construction and maintenance of IWT infrastructure. However, it is not possible to maintain a water transport industry using only public funds. Realization of the need to increase the share of water transport shipments in the future led to the search for additional sources of financing for the IWT sector in all regions under consideration. In this regard, there is a clear trend of attracting financial resources from private and non-state sector to the industry. Application of public-private partnership practices, as well as introduction of “user-pays” charges, is the most common way to improve the condition of water transport infrastructure facilities in conditions of the required budgetary savings. Such a practice is mutually beneficial for both the state and the business, and for the society as a whole.

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