From the Black to the Baltic Sea:

prospects for restoration of the E40 waterway connection via the rivers of Poland, Belarus and Ukraine

E40

Commission
on the development
of the E-40 waterway
on the Dnieper-Vistula
section

This project is funded by the European Union
within the Cross-border Cooperation Programme
Poland-Belarus-Ukraine 2007-2013

PL-BY-UA
2007-2013

From the Black to the Baltic Sea:
prospects for restoration of the E40 waterway connection via the rivers of Poland, Belarus and Ukraine

Activities of the Cross-border Commission on the development
of the E40 waterway on the Dnieper-Vistula section

In 1655, on Sejm of the Polish-Lithuanian Commonwealth, Jerzy Ossoliński, Chancellor of the Crown, voiced the idea of creating a waterway between the Baltic and the Black Sea. In 1784, construction works required for creation of this important European connection were completed by combined efforts of the Polish, Belarusian and Ukrainian people. At the present time, the E40 Dnieper-Vistula waterway Gdańsk — Warszawa — Brest — Pinsk — Mozyr — Kyiv — Kherson is considered an arterial waterway in accordance with the European Agreement on Main Inland Waterways of International Importance dated January 19, 1996. However, due to the fact that the section from Brest till Warsaw along the Zapadnyi (Western) Bug river is not navigable, navigation along the entire waterway is currently not carried out.

For many years, the question of restoring navigation along the E40 arterial waterway has been repeatedly discussed at the level of the Inland Transport Committee of the UN Economic Commission for Europe, Ministries of Transport and Infrastructure, cross-border regions, research institutions of Belarus, Poland, Ukraine, and Germany. Many years of this multilateral professional collaboration resulted in a common project «Restoration of the E40 waterway on the Dnieper-Vistula section: from strategy to planning». The project was implemented in 2013-2015 as part of the Poland-Belarus-Ukraine Cross-border Cooperation Programme funded by the European Union.

This project became an important step towards implementation of the E40 restoration idea. Thanks to the project, it became possible to establish a permanent trilateral Commission on restoration and development of the E40 waterway and to involve a wide and diverse pool of experts, including engineers, economists, lawyers, ecologists, biologists, hydrologists, sociologists, naval architects, experts in logistics, transport modeling and forecasting, and many others, in the detailed study of its aspects.

The purpose of this brochure is to present the activities of the Commission, main results of its work since its establishment, as well as its plans for further promotion of the E40 restoration idea.

Issues covered by the Commission have great significance for the whole Europe. Restoration of the E40 waterway will make it possible for the border regions of Poland, Belarus and Ukraine to become a multimodal transportation centres of international importance. It will also reduce traffic on roads, increase the flow of goods through the border regions, and contribute to the reduction of CO2 emissions due to the greater usage of water transport. In addition, with the E40 waterway restored, it will be possible to use the unique potential of the Vistula, Bug, Pripyat and Dnieper rivers for the development of international water tourism.

Nikolai KOTETSKI

Chairman of the Steering Committee of the Cross-border Commission on the development of the E40 waterway on the Dnieper-Vistula section

Contents

About the project «Restoration of the E40 waterway on the Dnieper-Vistula section: from strategy to planning» 6

About the E40 international arterial waterway 7

How would the three partner countries and the EU in general benefit from the restoration of the E40 waterway? 8

About the Commission on the development of the E40 waterway on the Dnieper-Vistula section 10

Structure of the Commission 11

Activities and events of the Commission 12

Feasibility study for the restoration of the E40 waterway 18

How will restoration of the E40 waterway influence the economy of the partner countries and the whole European region? 20

Which social consequences can be expected in case the E40 waterway is restored? 24

What impact will the E40 restoration have on the environment of Poland, Belarus and Ukraine? 26

What is the current state of various sections of the E40 waterway and what infrastructure needs to be built or modernized in order to restore navigation along the whole waterway? 28

What possibilities exist for financing of works related to restoration of the E40 waterway? How does this idea correlate with the national and European legislation? Which organizational issues should be solved in case this idea gets implemented? 34

Estimated investment costs for the restoration of the E40 waterway 36

Further steps of the Commission on the development of the E40 waterway on the Dnieper-Vistula section 38

Contacts 39

About the project «Restoration of the E40 waterway on the Dnieper-Vistula section: from strategy to planning»

Funding: European Union, as part of the Cross-border Cooperation Programme Poland-Belarus-Ukraine 2007-2013.

Total budget of the project: 912 657 € (821 281 € as EU co-financing, and 91 376 € as the contribution of the partners).

Project duration: December 2013 – December 2015.

Member countries: Poland, Belarus, Ukraine.

Project partners:

- Republican Unitary Maintenance and Construction Enterprise «Dnepro-Bug Waterway» (Lead Partner, Belarus)
- Brest Regional Executive Committee (Belarus)
- Local Foundation for Promotion of International Dialogue and Cooperation «Interakcia» (Belarus)
- Volyn Regional Department of Water Resources (Ukraine)
- Public Organization «Volyn Association of Scientists and Innovators» (Ukraine)
- Marshal Office of the Lubelskie Voivodeship in Lublin (Poland)
- Association for regional and local development «Progress» (Poland)

Main purpose of the project:

The purpose of the project was to identify an optimal scenario for the restoration of the E40 waterway by developing a comprehensive feasibility study, establishing a permanent cross-border commission on restoration and development of the E40 waterway, as well as promoting the idea of the E40 restoration on the national and international level.

More about the project:
www.e40restoration.eu

Project group on Facebook:
www.facebook.com/groups/e40restoration/

About the E40 international arterial waterway

The E40 international waterway links the Baltic Sea and the Black Sea.

It starts in Gdansk, and then follows along the rivers Vistula and Zapadnyi (Western) Bug until it reaches Terespol; it then goes further towards the Polish-Belarusian border.

In Belarus, the E40 waterway passes along the river Mukhavets, the Dnieper-Bug Canal, rivers Pina and Pripyat towards the border with Ukraine.

In Ukraine, the E40 route continues its way along the river Pripyat, and then flows into the Dnieper, until it reaches Kherson on the Black Sea.

All in all, the E40 waterway is more than 2 000 km long.

The main bottleneck that hinders navigation along the whole E40 waterway is a section between Warsaw and Brest, which is currently not navigable. Studies performed as part of the project “Restoration of the E40 waterway on the Dnieper-Vistula section: from strategy to planning” showed that solution to this problem would require construction of a new canal on the Polish territory that would link Warsaw and Brest, as well as certain construction and renovation hydrotechnical works in Belarus, Poland and Ukraine in order to improve navigation along the whole E40 waterway.

The E40 international waterway passes through 14 regions:

- **in Poland:** Pomeranian (Pomorskie), Kuyavian-Pomeranian (Kujawsko-Pomorskie), Podlaskie and Lublin (Lubelskie) voivodeships;
- **in Belarus:** Brest and Gomel (Homiel) oblasts (regions);
- **in Ukraine:** Chernihiv, Kyiv, Cherkasy, Poltava, Kirovohrad, Dnipropetrovsk, Zaporizhia and Kherson oblasts (regions).

Total area of the regions through which the E40 waterway passes equals to 392 949.08 sq.km and is home to 28 690 834 inhabitants.

How would the three partner countries and the EU in general benefit from the restoration of the E40 waterway?

The E40 restoration project has been supported on the national level in all three partner countries. Significance of this project has also been acknowledged on the international and European level. The project will be a first step towards improvement of transport accessibility in the region. In the long-term perspective, restoration of the Dnieper-Vistula waterway will turn cross-border regions of Poland, Belarus and Ukraine into a multimodal transportation hub that will have utmost importance not only for the corridor that links the Baltic and the Black Seas, but also for the Berlin-Moscow corridor.

By 2030, the European Union plans to create an integrated transport system that would optimize conditions for passenger and cargo transportation by increasing safety and reducing damage from transport to the environment. Moreover, in accordance with Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network, one of the EU's priorities is restoration and development of inland waterways.

In particular, the EU plans:

- to reduce CO_2 emissions by 60% by 2050 against 1990;
- to replace cars as the current means of long-distance cargo transportation (more than 300 km) with railroad and inland water transport by 30% until 2030 and by 50% until 2050;
- to increase the share of cargo transportation by railroad and inland water transport up to 30%.

Thus, restoration of the E40 waterway will have the following benefits:

Restoration of the E40 waterway will make it possible to transport up to 6 mln tons of cargo per year, thus ensuring significant **growth of trade flows** between Belarus, Poland and Ukraine.

E40 waterway will **facilitate multi-lateral trade** between the countries of the European Union and the Eastern Partnership, as well as between Europe and the rest of the world – in particular, with the Baltic countries, South-Eastern Europe, South Caucasus and Central Asia.

Investment into the modern logistics infrastructure in the regions of Belarus, Poland and Ukraine will lead to the **creation of new jobs**.

These regions will also enhance their role of **«trade gates» to the European Union and Eurasian Economic Union**.

Out of all modes of transportation, **water transport is considered to be the most environmentally friendly.** CO_2 emissions (per ton-kilometer) from inland water transport are 1.5 times less than from railway transport and 5 times less than from road freight transport.

About the Commission on the development of the E40 waterway on the Dnieper-Vistula section

Cross-border Commission on the development of the E40 waterway on the Dnieper-Vistula section with a permanent secretariat was established at the international conference on E40 restoration that took place in Brest (Belarus) on 27-28 March 2014.

MEMBERS OF THE COMMISSION:

Belarus

Ukraine

Poland

The Commission consists of more than 70 members. It includes representatives of regional authorities, ministries, research institutes, as well as transport, logistics and environmental organizations of Belarus, Poland and Ukraine.

PURPOSE OF THE COMMISSION

The Commission develops and supervises initiatives that are related to the topic of E40 restoration. In particular, the Commission:

- **Facilitates negotiations on the intergovernmental agreement** between Belarus, Poland and Ukraine on the status of the E40 waterway and establishment of the respective intergovernmental Commission
- **Holds consultations** with stakeholders on all stages of planning and development of the E40 reconstruction project;
- **Informs general public** in Belarus, Poland and Ukraine about the progress of the E40 restoration project and involves civil society into the decision-making process;
- **Raises awareness** of key stakeholders about the project and involves then into the project on all stages of its implementation;
- **Creates conditions** for inclusion of the E40 restoration project into the list of priority initiatives as part of the TEN-T (Trans-European Transport Network) and Eastern Partnership programmes.

WORKING LANGUAGES OF THE COMMISSION

Russian, Belarusian, Ukrainian, Polish and English.

Members of the Commission near the building of its Secretariat (Brest, Trishin waterworks facility), 28 March 2014.
Photo: RUMCE «Dnepro-Bug Waterway»

Structure of the Commission

Steering Committee

main decision-making body of the Commission:

- determines membership of the Secretariat and Working Groups, as well as their rules of procedure;
- makes decisions on participation or support of projects and initiatives;
- organizes exchange of information between the Working Groups of the Commission.

Secretariat of the Commission (Brest, Belarus)

administrative and coordination body of the Commission

- coordinates activities of the Commission and provides organizational assistance to the heads of the Working Groups
- ensures interaction between Working Groups, as well as communication of the Commission with organizations interested in the topic of the E40 restoration;
- ensures dissemination of information about results of the Commission's work.

Working Group 1

Development of water transport and cross-border economic development

Working Group 2

E40 waterway in the context of spatial development of cross-border regions

Working Group 3

Cross-border water resources and ecology

Working Group 4

Promotion of the idea of the restoration of the Dnieper-Vistula waterway connection at the European, national and regional levels

The Commission held its first session on **27-28 March 2014** at the international conference on planning of the E40 waterway restoration. And on **21 May 2014**, at the meeting in Lublin (Poland), experts of the Commission agreed on the terms of reference to be used as a basis for the development of the feasibility study for the E40 waterway restoration.

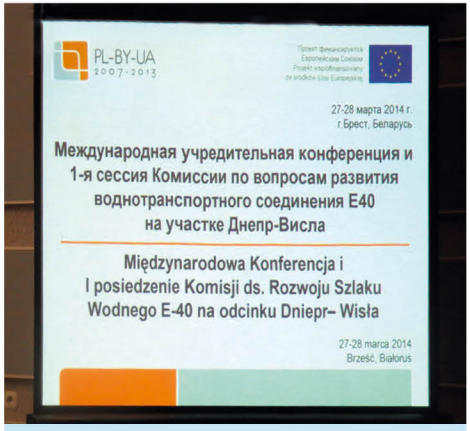


Photo: RUMCE «Dnepro-Bug Waterway»

Experts of the Commission at the working meeting in Lublin on 21 May 2014.
Photo: RUMCE «Dnepro-Bug Waterway»

In summer and autumn 2014, the Commission had been actively promoting the E40 restoration idea on the national and European level. The project was presented in the Polish Parliament at the conference «Baltic Sea – Black Sea: Restoration of the Water Route E40» on **22 May**; at the conference «WaterWays Expo 2014» in Bygdoszcz (Poland) on **10-12 June**; at the parliamentary conference of the Council of the Baltic Sea States in Olsztyn (Poland) on **26 August**;

at the international exhibition «Belarus Transport Week» in Minsk (Belarus) on **7-9 October**; and at the workshop «Eastern Partnership – Social Perspective» as part of the Eastern Partnership Days in Brussels on **5 November**.

In June 2014, the Commission announced an international tender for the development of the feasibility study for the E40 waterway restoration. **On 29 January 2015**, the contract was signed with the winner of the tender, an international consortium led by the Maritime Institute in Gdansk.

First results of the study undertaken by the consortium were presented **on 15-17 June 2015** in Lutsk (Ukraine). At first, experts and scholars were considering 8 scenarios, including the possibility of straightening up the tortuous and non-navigable section of the Western Bug between Warsaw and Brest. However, the Polish Ministry of Infrastructure and Development harshly criticized this option, as did environmental organizations.

As a result of the meeting in Lutsk, the Commission agreed upon three realistic scenarios to restore navigation along the E40 waterway that include construction of an artificial canal between Poland and Belarus. These variants were thoroughly investigated by the international consortium; their main conclusions are presented in the feasibility study.

E40 restoration idea is being discussed at the Polish Parliament (Sejm). Photo: RUMCE «Dnepro-Bug Waterway»

Discussion of possible options of the E40 waterway restoration in Lutsk, Ukraine. Photo: RUMCE «Dnepro-Bug Waterway»

Next big step was an international conference in Poland **on 29 July 2015**; it gathered representatives of the Ministry of Environment and Ministry of Infrastructure and Development of Poland. Conference participants learned about the progress of developing three priority scenarios of the E40 restoration and provided their comments and recommendations.

On 9-11 November 2015, in Geneva (Switzerland), Secretariat of the Commission presented the EU-funded project «Restoration of the E40 waterway on the Dnieper-Vistula section: from strategy to planning» at the 59th Session of the Working Party on Inland Water Transport of the United Nations Economic Commission for Europe (UNECE).

On 17 November 2015, 2nd Session of the Commission took place in Brest (Belarus). At the session, the Commission chose and approved a priority scenario for restoration of navigation along the entire E40 waterway. In accordance with the chosen scenario, a new artificial canal will have to be built in Poland; its length will be around 160 km. Also, a number of hydrotechnical facilities need to be modernized or constructed on the Belarusian and Ukrainian sections of the E40 waterway – on the Dnieper, Pripyat, and the Dnieper-Bug canal.

Participants of the conference in Warsaw.
Photo: RUMCE «Dnepro-Bug Waterway»

Presentation of the E40 restoration project at the 59th Session of the Working Party on Inland Water Transport of the United Nations Economic Commission for Europe (UNECE).
Photo: RUMCE «Dnepro-Bug Waterway»

On 15 December 2015, an ecological forum took place in Lublin; participants of the forum were introduced to the results of the consortium's work and discussed potential environmental risks stemming from the development of river navigation between the Baltic and the Black Seas. Ecologists voiced their concerns and stated that an additional analysis is needed to determine how the restoration and use of the E40 waterway will influence the water regime and biodiversity of the rivers composing the route (Vistula, Western Bug, Pripyat, and Dnieper) and protected areas, including those of international significance, that lie along these rivers.

Third Session of the Commission took place immediately after the ecological forum, **on 16 December 2015**. At the session, the Commission adopted the Resolution for Support of Measures aimed at the restoration and Development of the Main Waterway of International Importance E40, and signed new Regulation on the activities of the Commission. The Resolution was drafted with consideration of concerns voiced by environmental organizations in Lublin.

Specifically, the document contains separate points calling to conduct a thorough evaluation of environmental impacts for the entire E40 connection and present relevant mitigation measures.

Heated debate at the ecological forum in Lublin.
Photo: RUMCE «Dnepro-Bug Waterway»

Signing of the new Regulation on the activities of the cross-border Commission on the development of the E40 waterway on the Dnieper-Vistula section.
Photo: RUMCE «Dnepro-Bug Waterway»

By the end of 2015, the Commission could boast significant achievements in promotion of the E40 restoration idea.

ON THE REGIONAL LEVEL

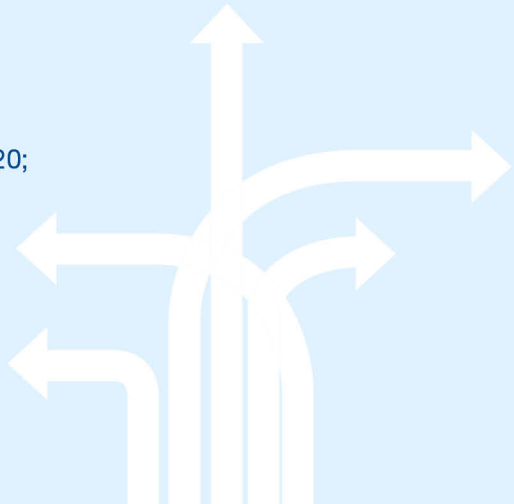
10 regional authorities in Poland, Belarus and Ukraine committed to include the E40 restoration issue in their development strategies:

- in Poland: Kujawsko-Pomorskie, Mazowieckie, Lubelskie, Pomorskie and Warmińsko-Mazurskie voivodeships;
- in Belarus: Brest and Gomel regions;
- in Ukraine: the city of Odessa, as well as Volyn, Odessa and Kherson regions.

ON THE NATIONAL LEVEL

Three ministries (**Ministry of Infrastructure of Ukraine, Ministry of Transportation and Communications of Belarus, Ministry of Maritime Economy and Inland Navigation of Poland**) included the E40 waterway into national strategic documents related to transport development, such as:

- Strategy of the Republic of Belarus for Innovative Development of the Transport Branch till 2030;
- Strategic Plan of Ukraine in the Water Transport Development till 2020;
- Assumptions for development strategy of inland waterways in Poland for the years 2016-2020 with the prospect of 2030.



ON THE INTERNATIONAL LEVEL

Ministries of the three countries committed to further support the inclusion of the E40 project into the TEN-T policy documents and promote this idea in frame of the European Agreement on Main Inland Waterways of International Importance (AGN);

Belarus and Ukraine suggested that the European Commission should include the E40 restoration project into the list of the Eastern Partnership priority projects in transport area to be supported by the EU as a part of their Modernization policy;

Working party on internal water transportation of the UNECE offered their support in conduction of activities aimed at promotion of the E40 restoration idea.

Feasibility study for the restoration of the E40 waterway

WHAT IS A FEASIBILITY STUDY?

The feasibility study is an extensive study of economic, social, ecological and financial aspects of the E40 waterway restoration. The feasibility study gives detailed answers to such questions as why the E40 waterway should be restored, what is the best way to do it, how much it will cost and what consequences can be expected.

WHAT IS THE PURPOSE OF THE FEASIBILITY STUDY?

Main purpose of the feasibility study is to give international organizations, governments of the three participating countries and regional authorities a set of recommendations on measures that need to be taken in order to restore and develop the E40 waterway in the most sustainable, economically efficient and environmentally friendly way. Suggested measures for the Dnieper-Vistula waterway restoration are expected to be integrated into European, national and regional strategies and development programmes for the next implementation period.

The feasibility study should become a basis for further activities aimed at planning and development of construction documentation for infrastructure works.

WHO DEVELOPED THE FEASIBILITY STUDY AND HOW WAS THIS PROCESS ORGANIZED?

Development of the feasibility study began in January 2015. The task was taken up by an international consortium consisting of five organizations and headed by the Maritime Institute in Gdansk. Other members of the consortium included:

- The Institute of Shipping Economics and Logistics (Germany);
- State Project Development & Research Institute of Marine Transport ChernomorNIIproekt (Ukraine);
- European-Ukrainian Business and Innovation Agency (Germany);
- National Academy of Sciences of the Republic of Belarus.

The consortium became the winner of the international tender for development of the feasibility study of the E40 restoration; in order to perform all the necessary works, the consortium was granted 365 000 Euro from the budget of the EU-funded project «Restoration of the E40 waterway on the Dnieper-Vistula section: from strategy to planning».

In the course of 2015, a team of consortium experts, including hydrologists, hydrographers, navigation specialists, geologists, engineers, economists, sociologists, ecologists, biologists, logistics experts and other professionals had been performing a comprehensive analysis of various aspects of the E40 waterway restoration. Their work was supervised by the Commission on the

development of the E40 waterway: the consortium's interim reports had been discussed at the working meetings of the Commission's Working Groups. Remarks and suggestions of the Working Group members resulted in follow-up revision of the reports; only then were the reports approved at the sessions of the Commission. Final report on fisibility study has undegone additional independent assessment. In view of this UNECE recommended the experienced subject matter expert William Zondag. As a result of monitoring, the expert made a conclusion that the research adheres to up-to-date standards, and the expected results have been achieved.

WHAT INFORMATION CAN I FIND IN THE FEASIBILITY STUDY?

The feasibility study analyzes existing cargo traffic, logistics schemes and technical characteristics of the E40 waterway, calculates economic effect and investment outlay and explores the influence of the E40 restoration on social development and environmental condition of cross-border territories. All these aspects are investigated with Belarusian, Polish and Ukrainian legislation in mind.

Apart from exploring the viability of the E40 waterway use, the document puts forward three alternate options for restoration of the waterway's most problematic section from the Vistula river to the Mukhavets river.

The study also gives recommendations for integrated use of the restored E40 waterway, including tourism development, construction of recreation areas and usage of renewable and alternative energy sources.

The pages below will give you more details on the contents of the feasibility study – specifically, its chapters that deal with the following questions:

- How will restoration of the E40 waterway influence the economy of the partner countries and the whole European region?
- Which social consequences can be expected in case the E40 waterway is restored?
- What impact will the E40 restoration have on the environment of Poland, Belarus and Ukraine?
- What is the current state of various sections of the E40 waterway and what infrastructure needs to be built or modernized in order to restore navigation along the whole waterway?
- What possibilities exist for financing of works related to restoration of the E40 waterway? How does this idea correlate with the national and European legislation? Which organizational issues should be solved in case this idea gets implemented?

If you are interested in the information presented below and you would like to learn more about the conclusions made by the Consortium, please contact the Secretariat of the Commission (see Contacts).

Transport and Market Economic Analysis,

or How will restoration of the E40 waterway influence the economy of the partner countries and the whole European region?

THIS CHAPTER OF THE FEASIBILITY STUDY:

- Describes **current economic situation** and offers **market analysis of the cross-border regions** of Poland, Belarus and Ukraine. In particular, this chapter gives data on,
  - trade destinations of the partner countries and regions;
  - types and volumes of goods traded, as well as modes of their transportation.
- Describes **demand and prospects for the transit of goods**. In particular:
  - analyses the possibility to transfer goods from Western Europe, especially Baltic countries, Netherlands and Norway, to the Black Sea countries – and further to Asia – through Poland, Belarus and Ukraine;
  - gives information on the possible transit routes, as well as expected types and volumes of goods to be transferred;
  - looks into the possibility of using sea ports on territories that lie along the E40 waterway, as well as options for integration with the E70 international waterway that connects the Oder and the Vistula.
- Offers **a transport model of the E40 route** that incorporates car and railroad transport; analyses **interconnections between goods**, and gives **a freight traffic forecast** for certain ports for 10, 20 and 30 years.
- Contains calculations and suggests **optimal transport tariffs** that could be charged by future operators of the waterway on the route from Gdansk to Kherson.
- Gives calculations of the **lock maintenance costs**, as well as **income from operating the canal** that will connect the Vistula and the Mukhavets rivers.
- Offers the **cost-benefit analysis** for each of the three proposed scenarios of constructing the Vistula-Mukhavets canal that will eliminate the main missing link of the E40 waterway.

MAIN CONCLUSIONS OF THE ECONOMIC ANALYSIS:

- The current share of inland water use for goods transportation in Poland, Belarus and Ukraine is negligible and does not exceed 1%. However, from 1970 till 1990 this share used to be much higher. All three countries have adequate human resources, infrastructure and legal framework, which indicates potential for development in this sphere. Investment into the new waterway is likely to trigger rapid growth of inland water freight transportation in these countries.

The share of inland water freight transportation in the EU and in the countries along the E40 waterway

Country	Railroad transport		Road freight transport			Inland water transport
	Million tons	%	Million tons		%	Million tons
EU (28 countries)	17.80%	1398	5924	75.40%	526	6.70%
Poland	12.60%	231	84.00%	1493	4.6	0.38%
Ukraine	24.12%	457	68.48%	1260	4	0.23%
Belarus	29.71%	154	40.85%	189	4	0.96%

Source: based on the data acquired from Eurostat and GUS

- The traffic flow analysis shows that the demand for inland water freight transport via the E40 waterway after its restoration may reach 6 million tons per year. This freight volume will ensure profitability of investments aimed at the E40 waterway restoration. In addition, according to the estimations made by the ministries of Poland and Ukraine, the prospective volume of goods transported via the Vistula and the Dnieper may reach 25 and 15 million tons per year, respectively. These estimations show that restoration of the E40 waterway is very likely to result in the growth of cargo volumes.

  The freight traffic forecast included not only prospective container shipping volumes, but also existing bulk cargoes on the territories served by the E40 waterway, such as coal in Poland; potash salts, refined oil products and stone products in Belarus; metal products, grain and other types of goods in Ukraine.

  It is expected that, when restored, the E40 waterway will be used for transportation of the following goods:

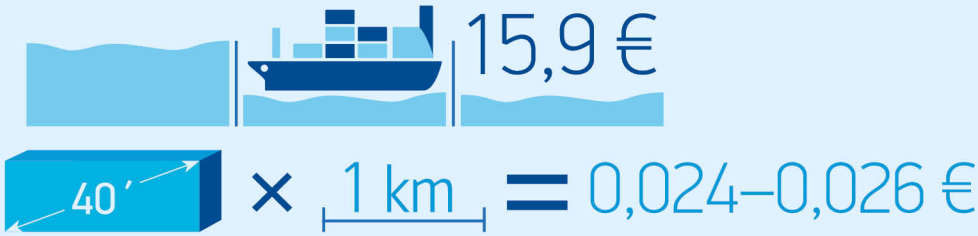
  - coal – 20%
  - ore minerals – 17%
  - construction materials – 35%
  - chemicals and fertilizers – 13%
  - agricultural products and timber – 7%
  - vehicles and equipment – 5%
  - other types of goods – 3%.

Transport and Market Economic Analysis,

or How will restoration of the E40 waterway influence the economy of the partner countries and the whole European region?

- It will take more than 14 days – longer than by railroad or by motor vehicles – to transport the cargo via the E40 waterway. But the more the distance and the heavier the cargo, the more beneficial inland water transport becomes. If used on the E40 route, one flap top barge can replace 40 container trucks. The benefits of inland water transport become visible when the goods are transported over distances longer than 500 km.

- Suggested rates of charges and fees for the use of the E40 waterway:
  - 15,9 € for one lockage of a cargo ship on the Vistula – Mukhavets canal;
  - Fee for the use of the canal: 0.024 – 0.026 € for 1 km of a 40 ft container.



The suggested tariff rates are lower than those on the Western European waterways. However, the resulting profits will be higher than the annual maintenance costs of the waterway, in accordance with the user-pays principle.

- Out of the three alternative variants of constructing a canal between the Visla and the Mukhavets rivers, the third variant (Southern route) is the most cost-effective. In this variant, the canal starts at the mouth of the Wieprz river and reaches the Mukhavets river near the city of Brest (please see the map on page 31).
- The development of inland navigation in Poland, Belarus and Ukraine and their integration into the network of international navigation routes will contribute to the development of various economic sectors, such as:
  - intermodal freight transport,
  - tourism,
  - logistics,
  - certain energy sectors, such as hydroenergy.
- Inland navigation is likely to become part of transport systems of city agglomerations, while river ports and transportation companies will create new jobs.
- New opportunities created by the navigable transport corridor from the Baltic to the Black Sea will result in economic and political benefits for the countries and regions along the E40 waterway.
- The partner countries will increase their chances of getting financial support in transnational projects aimed to boost traffic capacity of the transport networks that have a high priority for the EU.

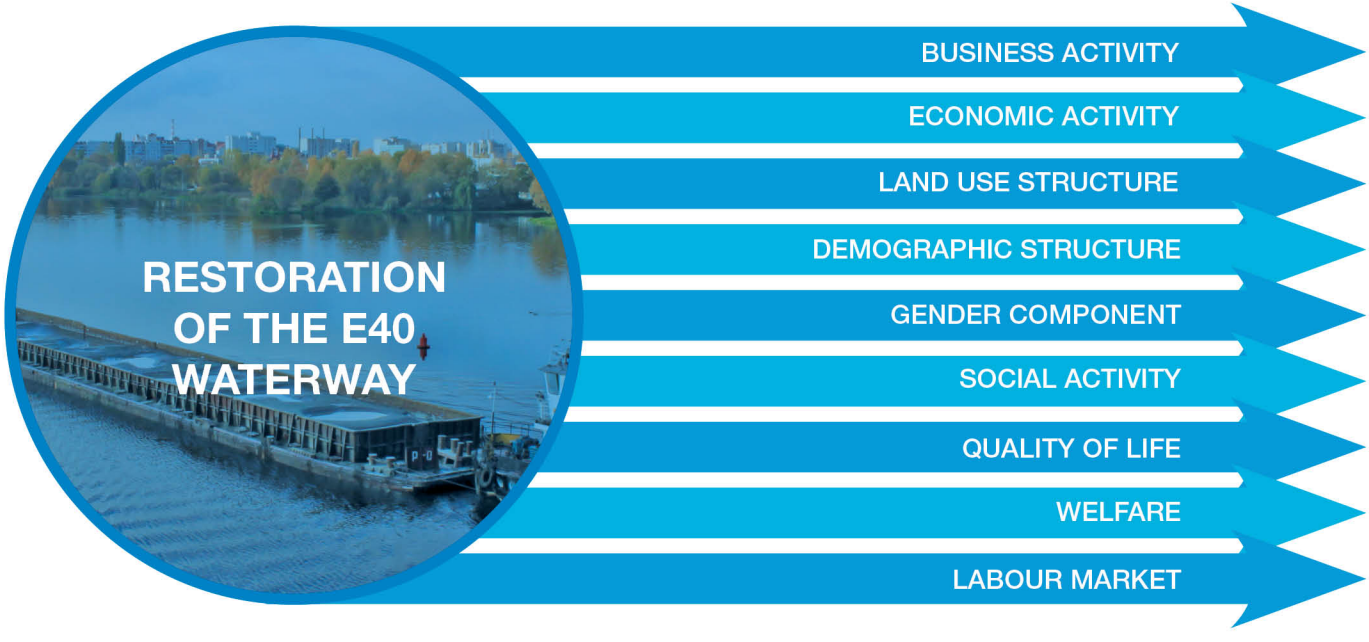
Brda river estuary to the Vistula river; author: Lech Grzywacz

Socio-economic impact assessment,
or Which social consequences can be expected in case the E40 waterway is restored?

THIS CHAPTER OF THE FEASIBILITY STUDY:

- Gives **a brief socio-economic overview** of the border regions of Poland, Belarus and Ukraine:
  - Describes **demographic situation** and points out a tendency to population decline.
  - Analyzes **the level of economic development**, which is generally characterized as low.
  - Offers information on **the population employment** in the cities and rural areas.

- Analyzes **possible impact** of the E40 restoration and operation **on various spheres of social development**, such as:



MAIN CONCLUSIONS OF THE SOCIO-ECONOMIC IMPACT ASSESSMENT:

- Social impact of the E40 waterway restoration is assessed as positive. New waterway will provide further impetus for the development of economy, tourism, demographics, and professional activity of the population.

- In particular, the following **socio-economic benefits** can be expected:
  - new attractive jobs,
  - better economic situation and living conditions of the population,
  - sustainable economic development of the cities and regions,
  - cheaper transport,
  - eco-friendly transportation of goods and lower CO2 emissions,
  - higher energy efficiency,
  - greater territorial cohesion of the partner countries and new possibilities for their integration.

- One can also expect impact that is hard or even impossible to evaluate financially, such as:
  - better protection against floods,
  - better water supply of the population, industry and agriculture,
  - better investment prospects of the partner regions;
  - development of industries that deal with construction, repair and maintenance of water craft.

Environmental assessment and assumptions on environmental impact,
or What impact will the E40 restoration have on the environment of Poland, Belarus and Ukraine?

Natura 2000 territories and three variants of the planned waterway
Source: developed by the Environmental Department of the Maritime Institute in Gdansk.

THIS CHAPTER OF THE FEASIBILITY STUDY:

Gives a detailed **overview of the environmental situation and significance** of the Belarusian, Polish and Ukrainian sections of the E40 waterway. It lists nature reserves and protected areas along the E40 waterway that can be affected during the E40 waterway restoration and puts special emphasis on the territories that belong to the Natura 2000 network.

- Analyzes **state of the environment** for the three alternative variants of the E40 waterway, including aspects such as:
  - geomorphologic conditions and depositional environment, including sediment quality,
  - water quality,
  - flora, including protected plant species,
  - fauna (invertebrates, fish, mammals, birds), including protected species and migration corridors for fish and birds, protected areas, including territories of the Natura 2000 network,
  - landscape,
  - acoustic climate,
  - air,
  - historical and archeological sites.

- Identifies **habitats and species** on the territories along the E40 waterway, as well as in the 10 km buffer zone (within 5 km on both sides of the waterway).
- Provides assumptions on the **environmental impact** of the E40 waterway restoration for each of its sections (Polish, Belarusian and Ukrainian) and for the whole waterway, including impact caused by:
  - construction and reconstruction works: construction of the canal between the Vistula and the Mukhavets; fragmentary modification of the natural waterway; construction of locks, ports, water reservoirs and access roads along the whole waterway;
  - maintenance of the waterway: water supply for canals; navigation intensity; modernization of current sections of the waterway and existing locks and reservoirs; maintenance of the navigation channels and technical infrastructure.

MAIN CONCLUSIONS OF THE ENVIRONMENTAL ASSESSMENT:

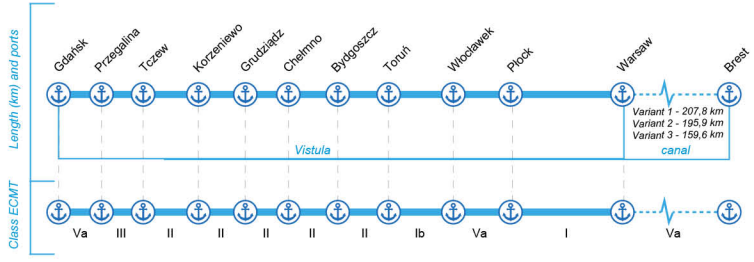
- Partial redistribution of transported goods from the road freight and railroad transport to the inland waterway transport will reduce the load on the environment.
- At the same time, restoration of the E40 waterway will have certain impact on the environment and river ecosystems, especially on the Natura 2000 territories. Therefore, it is crucial that the measures aimed at intensification of transport use of the E40 waterway take this impact into account.
- The environmental risks can be minimized with the help of relevant technologies, technical solutions and compensatory measures.
- A crucial precondition for the start of any project and design works is the conduction of a more detailed research that would contain comprehensive environmental impact assessment in accordance with the legislation of the EU, as well as Poland, Belarus and Ukraine.
- It is important to give thorough consideration to the issue of how to conduct engineering works in the Chernobyl area. In particular, there is a need to develop a set of measures aimed to prevent the transfer of radionuclides beyond the exclusion zone.
- Next stages of the E40 restoration project should necessarily include public consultations and recognize the opinion of local communities and environmental organizations.

Technical and navigational aspects of the E40 waterway,

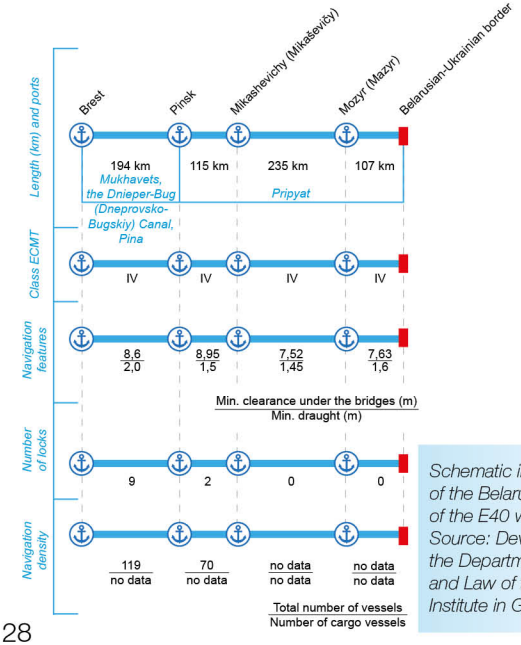
or What is the current state of various sections of the E40 waterway and what infrastructure needs to be built or modernized in order to restore navigation along the whole waterway?

THIS CHAPTER OF THE FEASIBILITY STUDY:

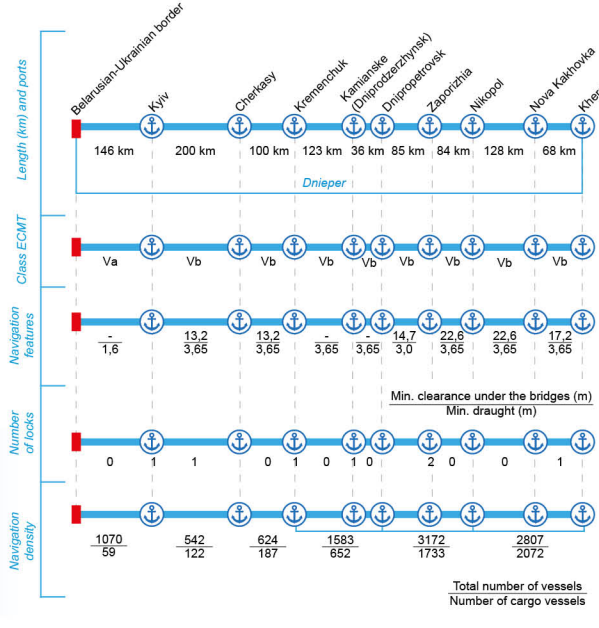
- Gives detailed **technical characteristics of the Ukrainian, Belarusian and Polish sections of the E40 waterway**, presents their schematic illustrations and describes their traffic density, number of locks, navigation features and distance between the ports.



Schematic illustration of the E40 waterway on the section Gdansk-Terespol
Source: Developed by the Department of Economy and Law of the Maritime Institute in Gdansk

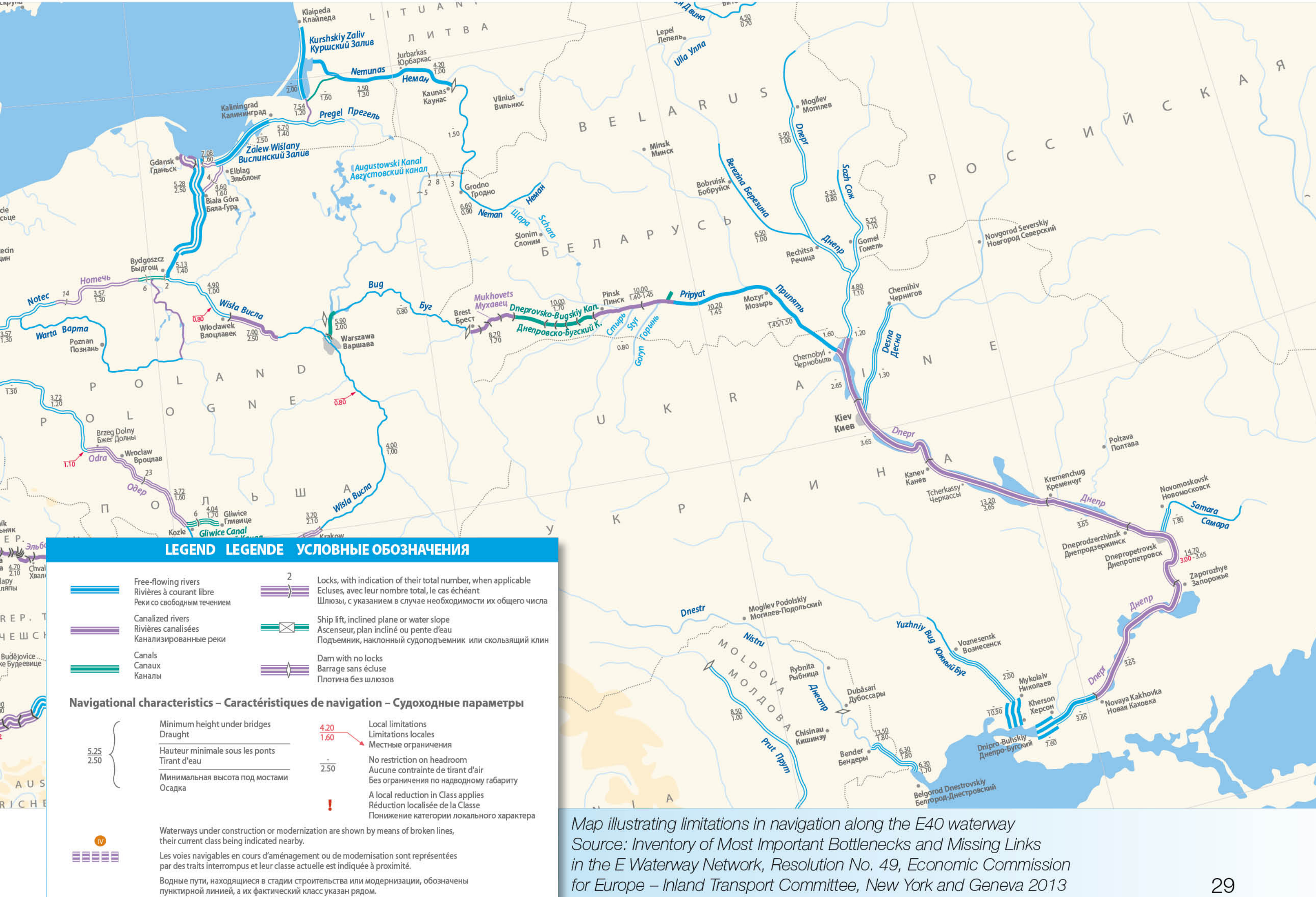


Schematic illustration of the Belarusian section of the E40 waterway
Source: Developed by the Department of Economy and Law of the Maritime Institute in Gdansk



Schematic illustration of the Ukrainian section of the E40 waterway
Source: Developed by the Department of Economy and Law of the Maritime Institute in Gdansk

◆ Lists and describes all **missing links and bottlenecks along the whole E40 waterway**.



Map illustrating limitations in navigation along the E40 waterway
Source: Inventory of Most Important Bottlenecks and Missing Links in the E Waterway Network, Resolution No. 49, Economic Commission for Europe – Inland Transport Committee, New York and Geneva 2013

Technical and navigational aspects of the E40 waterway,

or What is the current state of various sections of the E40 waterway and what infrastructure needs to be built or modernized in order to restore navigation along the whole waterway?

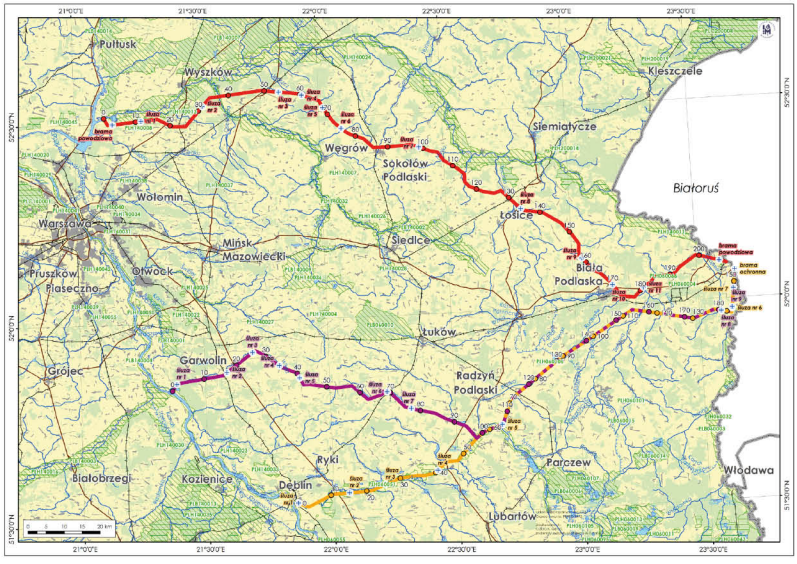
- Gives a detailed description of various **sections on the territory of Poland, Belarus and Ukraine** that require additional works in order to restore navigation.

- Analyzes **technical characteristics of the vessels** that could be used on the restored section of the E40 waterway and puts forward the concepts for a multimodal river port, as well as for passenger and freight water port terminals.

- Presents results of the **hydrographic and hydrologic exploration of the river basins** along the E40 waterway, including analysis of the water regime, location of reservoirs, and the means of meeting water demands.

Panorama of the Dnieper in Kiev district; author: larastock, Sergei Zavalniuk

- Puts special emphasis on the construction of the new Vistula – Mukhavets canal since it is the core and the largest infrastructural component of the project that will require detailed planning and significant investments. The study specifies the required dimensions and technical characteristics of the planned navigation canal and analyzes three most realistic route options:



Three variants of the Vistula-Mukhavets canal with locks. Source: Developed by the Department of Economy and Law of the Maritime Institute in Gdansk

NORTHERN ROUTE 207,8 km

Dębe reservoir (Zegrze Lake) – river valley in the lower course of the Zapadnyi (Western) Bug – Wołomin plain – Siedlce upland – Łukow plain – Łomazy depression – Kodeń plain – Brest Polesie – the Zapadnyi (Western) Bug river near Terespol – mouth of the Mukhavets river near Brest

MIDDLE ROUTE 195,9 km

Wilga river mouth up to the Vistula river – Middle Vistula valley – Garwolin plain – Żelechów upland-Łukow plain – old valley of the Wieprz river – Bystrzyca – Parczew plain – Wieprz-Krzna Canal-Łomazy depression – Kodeń plain – Brest Polesie – the Zapadnyi (Western) Bug river near Terespol – mouth of the Mukhavets river near Brest

SOUTHERN ROUTE 159,6 km

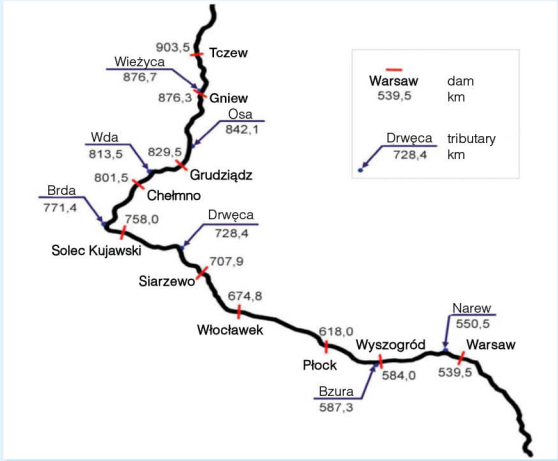
Wieprz river mouth up to the Vistula river – Middle Vistula Valley – old valley of the Wieprz river-Parczew plain-Łomazy depression – Kodeń plain – Brest Polesie – the Zapadnyi (Western) Bug river near Terespol – mouth of the Mukhavets river near Brest

MAIN CONCLUSIONS OF THE TECHNICAL AND NAVIGATION REPORT:

- Restoration of the E40 waterway is technically feasible in case the following conditions are fulfilled, efforts undertaken and activities conducted:

on the Polish sections:

- the Lower and Middle Vistula: construction of a cascade of dams;
- Vistula – Terespol section: construction of a new Vistula-Terespol canal that would pass through the territories of the Mazovian Lowland (Nizina Mazowiecko-Podlaska) and Polesie and would connect the courses of the Vistula and the Western Bug.



Schematic illustration of the Lower Vistula cascade with marked dams
Source: Hydrodynamic model of the Lower Vistula with a dam cascade. Gdansk University of Technology, Faculty of Civil and Environmental Engineering, Gdansk, 2014

Schematic illustration of the Middle Vistula cascade with marked dams.
Source: Developed by the Department of Economy and Law of the Maritime Institute in Gdansk based on the concept of the Middle Vistula cascade of 1963.

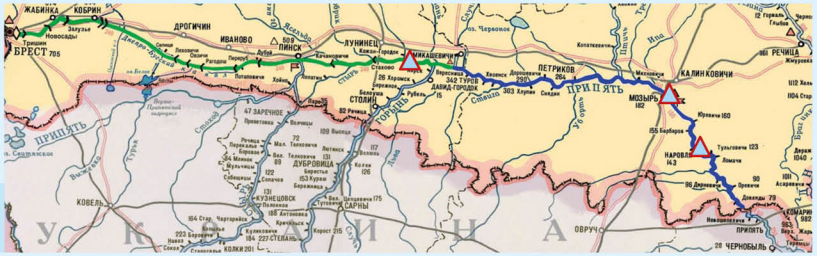
on the Belarusian section:

- connection between the new Vistula – Terespol canal and the Mukhavets river: conduction of engineering works along the historically shaped waterway passing through the territory of the Brest city (from the Mukhavets river, along the existing course, and up to the Bug river) that would connect the Polish and the Belarusian sections of the E40 waterway;

Schematic illustration of the E40 waterway passing through the territory of Brest along the historically shaped coarse (from the Mukhavets river, along the existing course, and up to the Western Bug river)
Source: Materials of the 2nd session of the Commission on the development of the E40 waterway, Brest, 17 November 2015

- the Dnieper-Bug Canal: reconstruction of a number of hydrotechnical facilities of the Eastern slope (navigation locks, spillways);

- the Pripyat river: construction of three new hydraulic structures and conduction of certain engineering works, including environmental mitigation measures.



Proposed variant of the Pripyat river regulation with construction of three dams.
Source: RUMCE «Dnepro-Bug Waterway»

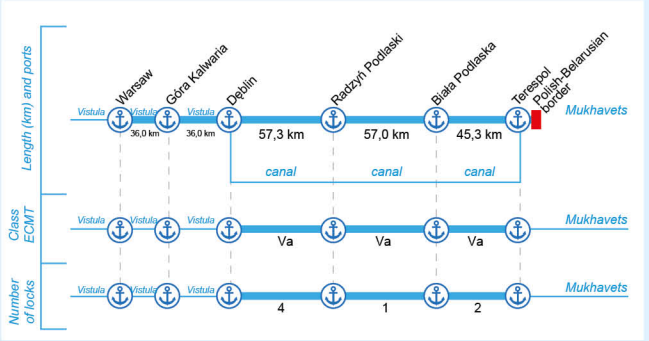
on the Ukrainian section:

- the Pripyat river: dredging works on several sections;
- the Dnieper river: modernization of six locks.

- The first requisite for the success of the project is the ability to restore navigability on the Polish part of the E40 waterway and create conditions for bulk cargo transportation along the Vistula, as well as to construct a new canal that would connect the Polish and the Belarusian sections of the E40 waterway.
- Out of the three proposed variants of the Visla-Mukhavets canal, the third variant is the best possible option. In this variant, the canal starts from the Vistula river at the mouth of the Wieprz river and reaches the Mukhavets river near the city of Brest.

  After the completion of all necessary works, the E40 waterway will become available to the vessels with the following characteristics:

  - **on the reconstructed Polish section**: up to 2.5 m draught (current draught limit is less than 1 m throughout the major part of the Polish section)
  - **on the Belarusian section**: up to 2 m draught within 5 years and up to 2.4 m draught within 15 years from the start of construction works (current draught limit is 1.25 – 1.6 m)
  - **on the Ukrainian section (the Dnieper)**: up to 3.0 – 4.1 m draught.



Schematic illustration of the E40 waterway on the Vistula-Terespol section: Variant 3
Source: Developed by the Department of Economy and Law of the Maritime Institute in Gdansk

- The calculations show that, theoretically, it is possible to provide a sufficient water supply for the planned Vistula-Mukhavets canal. However, further elaboration of the water supply system project calls for additional research that would include such aspects as climate change and the use of cross-border water resources.

Financial, legal and institutional aspects of the E40 waterway restoration,

or What possibilities exist for financing of works related to restoration of the E40 waterway?
How does this idea correlate with the national and European legislation?
Which organizational issues should be solved in case this idea gets implemented?

THIS CHAPTER OF THE FEASIBILITY STUDY:

- Assesses **the impact of the current financial crisis** on the credit costs and cost effectiveness of the E40 restoration project.
- Gives **the overview of financial institutions** that could provide finances for implementation of the E40 restoration project.
- Looks at **the experience of other countries** and compares the E40 restoration project with other similar projects in Europe – primarily, from the point of view of their costs and funding opportunities.
- Provides **a detailed overview of the documents and legal acts** that will be applicable in case of the E40 waterway restoration from the point of view of international agreements, EU documents and national legislation of Belarus, Poland and Ukraine.

MAIN CONCLUSIONS OF THE FINANCIAL, LEGAL AND INSTITUTIONAL ANALYSIS:

- Given the current financial crisis, the E40 restoration project has a good chance of getting a credit from state-owned and private banks, as well as private businesses.
- Investments into the E40 waterway restoration can be financed from such sources as:
  - funds of the European Union;
  - national budgets;
  - concessional loans from international financial institutions;
  - private funds.

- The European Fund for Strategic Investments (EFSI) seems to be the most promising source of funding for the E40 restoration project. Current efforts should be aimed at the inclusion of these investments into the list of works that might be funded from the EU budget in the foreseeable future.
- The analysis of the documents and legal acts has not identified any fundamental legal barriers that could keep the E40 restoration measures from happening. All these documents recognize the importance of developing inland navigation in order to cut the transport external costs – in particular, to decrease emissions and mitigate the consequences of climate change.
- It is crucial to involve national governments into the implementation of the E40 restoration project, especially on the section from the Vistula river to the Mukhavets river.
  - To begin with, consistent state policy aimed at support and funding of inland navigation is essential in order to stop the degradation of waterways and improve their condition.
  - Next, the E40 restoration project would greatly benefit in case national governments take part in its funding. Governmental support, as well as all other kinds of support for this project, will greatly increase the chance of getting concessional loans and will make other countries and institutions in Europe more interested in the project.
- The process of E40 restoration will be more organized in case Poland, Belarus and Ukraine sign the intergovernmental agreement on establishment of the respective River Commission.
- In order to effectively develop navigation along the whole E40 waterway and contribute to inclusion of the E40 waterway into the European transport networks, all stakeholders should join their efforts in promoting the E40 as a whole, and not just its separate national sections.

Vistula river estuary to the Gdansk Bay. Source: RZGW Gdansk

National Waterways Enterprise «Ukrvodput» Source: NWE «Ukrvodput»

The Dnieper Bug waterway. No.1 Duboj. Source: Republican Unitary Enterprise «The Dnieper Bug waterway»

Estimated investment costs for the restoration of the E40 waterway

BELOW ARE THE EXPERTS' ESTIMATIONS OF THE FUNDS THAT WILL BE REQUIRED FOR THE RESTORATION OF THE E40 WATERWAY:

Works on the Belarusian section of the E40 waterway:

- reconstruction of the existing hydrotechnical structures on the Eastern slope of the Dnieper-Bug canal: **19.5 mln €**;
- engineering works aimed to increase dimensions of the navigation channel and raise draught limitations for vessels up to 2.4 m: **5 mln €**;
- construction of new hydraulic structures on the Pripyat river, including IV class navigation locks in accordance with international classification: **55-120 mln €**;
- creation of the navigable section of the E40 waterway on the Polish-Belarusian border: **5-15 mln €**;
- modernization of the water supply system of the Dnieper Bug Canal / construction of the Zhirovskoe water reservoir: **11,7 mln €**

**TOTAL*
96,2–171,2 mln €**

** excluding the costs of compensatory measures*

Works on the Polish section of the E40 waterway:

- investment costs of restoring the Vistula waterway and resuming navigability of the Lower and Middle Vistula: **9 972,19 mln €**;
- investment costs of constructing a navigation canal that would connect the Vistula and the Mukhavets rivers (in accordance with Variant 3): **1 943 mln €**

**TOTAL
11 915,19 mln €**

Works on the Ukrainian section of the E40 waterway:

- investment and maintenance costs of supporting stable and safe functioning of the Dnieper navigation locks in 2016: **6,8 mln €**;
- capital investment in the reconstruction of the Dnieper navigation locks within the next five years: **24.2 mln €**

**TOTAL
31 mln €**

ESTIMATED COSTS OF ENVIRONMENTAL COMPENSATORY MEASURES

UA	mln €	1 – 1,55
BY	mln €	3,54 – 5,06
PL	mln €	417 – 596

421,54 – 602,61 mln €

TOTAL ESTIMATED INVESTMENT COSTS

UA	mln €	32 – 32,55
BY	mln €	99,74 – 176,26
PL	mln €	12 322,19 – 12 511,19

TOTAL

min **12 453,93** mln €

max **12 720** mln €

Further steps of the Commission on the development of the E40 waterway on the Dnieper-Vistula section

After the end of the project «Restoration of the E40 waterway on the Dnieper-Vistula section: from strategy to planning», the cross-border Commission continues to work on further development and promotion of the E40 waterway restoration idea.

In particular, the Commission has the following plans:

IN THE SHORT-TERM PERSPECTIVE (2016 – 2017): 2016 – 2017

- to send the feasibility study to international organizations, ministries and structures, civil society organizations and experts interested in the restoration of the E40 waterway;
- to perform evaluation of the final draft of the feasibility study by experts of relevant ministries and structures;
- to continue activities aimed at introduction of provisions of the feasibility study into international, national and regional transport development strategies;
- to organize an exhibition with presentation of the feasibility study results as part of the Eastern Partnership Days in European Parliament (Brussels);
- to conduct two sessions of the Commission, discuss achieved results and develop a detailed activity plan for the next period;
- to organize a common meeting on E40 development for representatives of the ministries of the three countries;
- to develop a project proposal and apply for funding for conduction of a comprehensive environmental impact assessment of the E40 restoration project on the territory of Belarus, Poland and Ukraine.

IN THE MID-TERM PERSPECTIVE (2018 – 2020): 2018 – 2020

- to conduct a comprehensive environmental impact assessment of the E40 restoration project along the whole E40 waterway, including public consultations;
- to contribute to adoption of the intergovernmental agreement between Belarus, Poland and Ukraine on the status of the E40 waterway and establishment of the respective intergovernmental Commission;
- to work on inclusion of the E40 waterway into the Trans-European Transport Network as part of activities on the TEN-T extension by 2023 in accordance with the Regulation (EU) No. 1315/2013 of the European Parliament and of the Council of

- 11 December 2013 «On Union guidelines for the development of the trans-European transport network»;

to continue the search for sources of funding for the development of the design documentation for the E40 waterway restoration project;

IN THE LONG-TERM PERSPECTIVE (2021 – 2025): 2021–2025

- to develop the design and construction documentation for the E40 waterway restoration project.

Contacts

If you are interested in the idea of the E40 waterway restoration and would like to know more about the activities of the Commission on the Development of the E40 waterway on the Dnieper-Vistula section, please contact the Commission's Secretariat:

Mr. Andrei Rekesh,
Secretary of the cross-border Commission
on the development of the E40 waterway on the Dnieper-Vistula section,
Tel.: +375 165 30 11 76
+375 44 785 13 58
Fax: +375 165 31 60 20
secretary@e40restoration.eu

You are also welcome at the website of the Commission
www.e40restoration.eu

and on the Commission's Facebook group:
www.facebook.com/groups/e40restoration

Project partners would like to express their sincere gratitude to the European Union
for supporting the project «Restoration of the E40 waterway on the Dnieper-Vistula section: from strategy to planning»
and helping to create opportunities for increasing competitiveness of the border areas and improving access to the regions.

European Union

The European Union is made up of 28 Member States who have decided to gradually link together their know-how, resources and destinies. Together, during a period of enlargement of 50 years, they have built a zone of stability, democracy and sustainable development whilst maintaining cultural diversity, tolerance and individual freedoms. The European Union is committed to sharing its achievements and its values with countries and peoples beyond its borders.

www.europa.eu

The European Neighbourhood and Partnership Instrument (ENPI) is the initiative of the European Commission, aiming at developing the cooperation between the European Union and the partner countries by ensuring the integrated and sustainable regional development.

The main objective of the Cross-border Cooperation Programme Poland-Belarus-Ukraine 2007-2013 is support for cross-border development processes.

www.pl-by-ua.eu

This publication has been produced with the assistance of the European Union.
The contents of this publication are the sole responsibility of Local Foundation for Promotion of International Dialogue
and Cooperation 'Interakcia' and can in no way be taken to reflect the views of the European Union.

Text: Marina Borisova, Irina Antonova
Contributions by: Andrei Rekesh, Ivan Shchadranok
Design and layout: Yuliya Sharshavitskaya

Printed in printing house LLC «TM ARGO-GRAFIKS»
Minsk, Melezh str., 1, of. 221. Phone: +375 (17) 336 70 51.
License № 02330/110 from 14.04.2014, was extended 14.04.2014 № 67 till 30.04.19