

# The role of inland ports in integration of polish waterways with the european network

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## ABSTRACT



*This paper includes main conclusions of author's studies within the framework of the EUREKA Project. Present state of inland waterways in Poland, legal regulations, importance of inland navigation in cargo transport and river ports are shortly presented. Most important barriers for the development of polish inland waterways are also described. In August and October 2004 the author participated in two technical trips which aim was to recognize actual state of the inland waterways and ports in northern Poland. Presented photos were made during these cruises.*

**Keywords :** inland waterways, river ports

## INTRODUCTION

The presented article is a summary of author's research activities performed in years 2004-2006 within the framework of the EUREKA INCOWATRANS E!3065. Project group on „New generation of environment friendly inland and coastal ships for Polish East-West waterways”. The topics analysed by the author were entitled „A study of European fast, multi-modal inland transport systems, with particular attention being paid to river port systems of cargo loading, unloading and storage, and final land transportation in East-West direction - analysis of adaptation of the Lower Vistula waterway to meet the assumed tasks” and „The integration of ecological means of water and railway transport in northern Poland”. The present publication includes main conclusions resulting from these analyses.

## INLAND WATERWAYS IN POLAND

Poland does not have natural conditions for developing an intensively branched network of waterways. Nevertheless, starting from the thirteenth-fourteenth century, a systematic development of inland navigation was observed. The core of the waterway network is created by the Vistula and Oder Rivers. Due to their meridional location, for centuries they have created separate waterways without any mutual links. A similar geographical position of main natural inland waterways is also observed in the neighbouring countries, for instance the waterway networks created by Elbe, Rhine, Dnieper, and Niemen Rivers. Development of inland navigation in Europe was the reason why in the eighteenth century regular activities were started to create a network of waterways by building artificial water canals linking selected natural navigation routes, and to improve navigational conditions on the already existing navigation routes. Activities of this type were also recorded on the area of the present territory of Poland. A basic system of the waterway network existing in Poland was brought into being in the eighteenth and nineteenth century. The total length of classified waterways in Poland changes, reflecting changes in legal regulations that formulate principles for defining boundaries and classes of inland waters.

The regulation which are in force now and regulate the status of inland waterways in Poland include :

- the act on inland navigation, dated December 21, 2000, (Gov. Reg. and Law Gaz., no. 5, item 43 of January 24, 2001)

- the Water Law act, dated July 18, 2001, (Gov. Reg. and Law Gaz., no. 115, item 1229 of October 11, 2001)
- the Resolution of the Cabinet of Ministers, dated September 11, 2001, changing the resolution on water boundaries, coastal line, near water installations and classes of navigable inland waters (Gov. Reg. and Law Gaz., no. 106, item 1151 of September 29, 2001)
- the Resolution of the Cabinet of Ministers, dated May 7, 2002, on the classification of inland waterways (Gov. Reg. And Law Gaz., no 77, item 695 of June 18, 2002)

According to the classification in force in Poland :

- total (nominal) length of inland waterways equals 3649.1 km; which means that it has been reduced by 18% in recent years (1977-2002)
- waterways adapted to cargo transport activities are 1720 km long (starting from class II)
- only 4.5% of total length of the waterways belongs to class V (including the Wloclawek Reservoir – 1.5%, class Va and internal seawaters – 3%, class Vb), 1% - to class IV, 11% - to class III, 25% - to class II, and over 50% to class Ia and b. That means that these routes are in practice only available for small recreation vehicles – yachts and kayaks.

The inland waterways in Poland are subject to systematic degradation resulting from: the absence of a strategy for developing inland navigation in Poland, lack of attendance of water navigation routes and hydrotechnical buildings, liquidation of ports and cargo handling equipment, and changing concepts of the use of main water navigation routes in Poland.

Within the framework of the AGN convention (Agreement on main inland waterways of international significance) of 1996, which was not signed by Poland as the only nation in Europe, the territory of our country is crossed by three international waterways :

- ⇒ E-30 – linking the Baltic Sea with the Danube River in Bratislava (part on Polish territory – the Oder River from Szczecin to the border of Poland)
- ⇒ E-40 – linking the Baltic Sea with the Dnieper River, via the Vistula River from Gdansk to Warsaw and further along the Bug River to Brzesc
- ⇒ E-70 – linking the Netherlands with Russia and Latvia via the Oder River from the Oder-Havel Canal to the Warta River mouth, the Oder-Vistula waterway (Warta and Notec

Rivers, Bydgoski Canal) and the Vistula and Nogat, or Szparkawa Rivers to Elblag.

A concept of adapting the Polish waterways to present standard parameters of international navigation routes (class IV and Vb) are rather unrealistic due to poor local hydrological conditions and the resultant huge investment expenditures required. What is more realistic, however, is the reconstruction of those water navigation conditions which were about 40 years ago, i.e. adapt the waterways to class III parameters (according to the classification in force now). As for the above list of international waterways, the only practically realisable action is the revitalisation of the E-70 waterway as a continuous navigation route leading to Russia and Baltic Republics.

### PRESENT STATE OF INLAND NAVIGATION

At present, the inland navigation in Poland contributes in about 0,7% to cargo transport and is ranked last, compared to other transportation forms in Poland. 9 million tonnes of cargo transported via waterways per year (average from recent 20 years) places Poland among countries with the lowest contribution of inland water transport in Europe. The transport is mainly executed locally, which results from, among other factors, the present condition of Polish waterways making the planned and regular long-distance navigation very difficult. Transporting cargo over longer distances is executed sporadically and refers to single large-dimension commodities in favourable seasons of the year.

### INLAND PORTS IN POLAND

At the beginning of the twentieth century, when the Oder-Vistula connection was a main transportation route, numerous river ports and transportation hubs were located along it. On the Warta River the cargo was shipped in Kostrzyn, Skwierzyna, Miedzychod, Poznan, Lubon, Gorzow, Ujscie, Naklo, Czarnkow, Drezdenko, Krzyz and Notec. The only ports which survived to the present day are the ports of Kostrzyn (discussed below), Ujscie, Poznan and Bydgoszcz. But in fact, the shipment only takes place on waterway links with the main rivers: Oder (Kostrzyn) and Vistula (Bydgoszcz). In the port of Ujscie the cargo has not been shipped since 1996, while in Krzyz - since 1998. On the territory of the port of Poznan a housing estate was built.

According to the AGN convention, the operation of some inland river ports existing in Poland is planned on the waterways composing the European waterway network. The list of these ports includes :

- ★ Swinoujscie, Szczecin, Kostrzyn, Kozle, Gliwice – on the E-30 navigation route
- ★ Gdansk and Warsaw – on the E-40 navigation route
- ★ Kostrzyn, Gdansk and Elblag – on the E-70 navigation route.

At present, none of these ports, like none of the waterways to which they belong, meets technical conditions formulated in AGN. However, taking into account only their location, of the highest significance in the future should be the ports of :

- ✦ Kostrzyn (crossing of E-30 – E-40 navigation routes),
- ✦ Szczecin (end of E-30 navigation route),
- ✦ Bydgoszcz (links E-40 and E-70 navigation routes)
- ✦ Gdansk (end of E-40 and E-70 navigation routes)
- ✦ and perhaps Torun, Bydgoszcz, and Elblag.

Below given are the volumes of cargo shipped in selected Polish inland ports, along with the characteristics of the ports of Kostrzyn, Gdansk, Bydgoszcz, Torun, and Elblag.

**Table 1.** Volumes of cargo shipped in selected inland ports (acc. to data presented by Porty Żeglugi Bydgoskiej S.A.).

Port	Shipping capacity [thousand tonnes]	1990	1994	1998	2001
Bydgoszcz	1000	586.8	652.0	839.0	619.4
Poznan	-	7.7	30.6	-	-
Ujscie	100	22.5	0.4	-	-
Krzyz	350	15.6	5.4	-	-
Kostrzyn	550	73.8	267.7	248.5	182.8
Malbork	100	43.4	107.3	97.3	45.8
Wroclaw	1400	831.0	560.0	510.0	508.6
Gliwice	2000	937.0	-	200.6	498.1
Cigacice	-	0	38.4	59.5	453.1

**The Port of Kostrzyn** is situated on the right bank of the Warta River, at a distance of 1,5 km from the point where it joins the Oder River, in 617+600 km, and is the starting port for the Oder-Vistula waterway. However, due to direct vicinity to the main navigation route it is often structurally included to the complex of ports on the Oder River.

The port of Kostrzyn is the oldest port on the Oder waterway. A river port existing in this place was mentioned in historical notes as early as at the thirteenth century. The next structures which were brought into being here were: a winter port, a constructional port of the water administration, and a transportation hub located on the Warta River at a distance of 2+000 km. In the time before the Second World War 120 thousand commodities per year were shipped in Kostrzyn. Like for the majority of ports on the Oder River, the port of Kostrzyn was partially destroyed during war activities. The reconstruction lasting two years ended in 1949.

The present view of the port from the waterway side is shown in Fig. 1. In fact, this port is a reinforced Warta riverside, slightly displaced into the land from the main river bed and bordered by a high vertical berth.



**Fig. 1.** Port of Kostrzyn on the Warta River (own photo, August 2006).

Since it is an open port, the berth is adapted to operate at changing water levels in the river. The range within which the water level in the Warta River changes equals 3.5 m. Below given are the basic technical parameters of the port of Kostrzyn :

- ❖ port area : 5.94 ha
- ❖ port basin area : 0.64 ha
- ❖ total length of berths : 740 m
- ❖ length of loading berths : 240 m
- ❖ length of waiting berths : 500 m
- ❖ area of stacking yards : 11130 m<sup>2</sup>
- ❖ area of warehouses : 1450 m<sup>2</sup>.

Moreover, the port of Kostrzyn has berths belonging to industrial plants situated on the Warta River. One of them is shown in Fig. 2. Author's personal observations, made in August 2006, have revealed that cargo is not shipped in those places.



Fig. 2. Trans-shipment berth in Kostrzyn (own photo, August 2006).

The port of Gdansk is situated at the crossing point of main European transportation routes linking Central-Eastern Europe with Scandinavia, and Western Europe with Eastern Europe. The port has an over thousand years lasting tradition. Its strong points, beside the geopolitical location, are open water regions and the infrastructure, which allows a wide variety of commodities to be shipped.

The port of Gdansk has a typical sea trade characteristic. And it is practically unavailable for the inland watercraft. The berths are not adapted for serving this type of transport. Ship captains are not allowed to move unattended on the aquatorium and are obliged to take a harbour pilot on board, which considerably increases shipment costs covered ship owners. Moreover, the length of berths that serve passenger ships is very limited, which could be visibly testified during the first visit of the hotel ship MV Frederic Chopin to Gdansk.

At the beginning of the twenty-first century port authorities analysed an option of adapting one of the basins for inland navigation purposes. This would extend direct links with the hinterland, now making use of the road system (a bottleneck in the port transportation system) and/or the railway system. The inland port was planned to be built in the Wladyslaw IV basin, situated in direct vicinity of the exit from the internal port to the Gdanska bay. The inland port hinterland was planned to be situated on the territory of the present Duty-Free Area.

At present the basin has the following technical parameters :

☆ port area:	33.50 ha
☆ length of berths:	1070 m
☆ area of roofed warehouses :	38000 m <sup>2</sup>
☆ area of stacking yards :	80000 m <sup>2</sup>
☆ maximum length of served ships:	170 m.

The basin is equipped with trans-shipping installations of carrying capacity between 3 and 16 t. The area has good access roads, a side street and loading platforms, administrative buildings, full land development and the base for shipping fruits and vegetables.

The Port of Gdansk Authority S.A. were going to invite tenders for a competition in preparing a study of port accessibility from the side of inland waterways. Unfortunately, after changes in company's authorities, all concept of further port development have been abandoned and the above idea was not put in practice. In the context of the assumptions formulated in AGN, according to which Gdansk is the beginning for the E-40 and E-70 waterways this resignation seems to be rather rash.

**The port of Bydgoszcz/Torun complex.** Concepts are discussed to situate a multi-media cargo shipment terminal directing the stream of commodities from inland ships to road and railway transport and vice versa, and making use of the A1 highway and railway network in southern and eastern directions. Another concept under discussion takes into account situating in this region a well developed port with the installations serving regular passenger transport.

**Elblag.** Regional and city authorities make attempts to revitalise the port for the local international traffic. Moreover, despite numerous objections and protests of local and ecological circles, a concept has returned to dig a canal across the Vistula Spit at its base, which would help develop the port of Elblag as a trans-shipping place for short-range sea transport, and at the same time relieve the port of Gdansk in multi-medial land and water transport.

## DEVELOPMENT PROSPECTS FOR INLAND WATER NAVIGATION IN POLAND

„State's transport policy for years 2006 – 2025” (document accepted by the Cabinet of Ministers on June 29, 2005) does not include, in practice, plans of development of inland waterways until 2025. However, the document prepared in 2006 and entitled “Strategy of Development of Polish Sea Economy for years 2007-2015” presents a quite different standpoint, and formulates clear tasks referring to inland water navigation. Present share of water transport in total transport of commodities equals about 0.9%, and for years has been kept on the same level. This, among other factors, results from the conviction of the decision makers that the inland water navigation is of marginal importance in Polish transportation system. Sample transportation solutions which are effectively implemented in other EU countries have no influence on strategic plans of state development. The scale of railway transport is also gradually reduced. The only transportation systems which are to be developed are road and air transports (of both cargo and passengers). Among all possible solutions, this one is the most expensive and least favourable from the point of view of keeping the environment in a good state. The absence of motorways and expressways, along with the bad state of the remaining existing roads is the source of certain limitations in the development of this type of transportation. Changing this situation requires huge investment expenses and long realisation time. Revitalisation of the waterways would lighten the load of the road system, and considerable reduce the emission of impurities to the atmosphere, water and ground. According to the most recent German data, the inland water transport emits to the atmosphere five times as little carbon dioxide (in g/tkm), as the road transport. Moreover, it is characterised by much lower number of accidents and victims, and in practice does not generate noise, nor water and ground pollution. Unfortunately these data (and the resultant lowest ecological costs of water transport, compared with other transportation forms) do not find their reflection in state's transportation policy.

The importance of inland water navigation and its development is not reflected either in the Water Economy Strategy, accepted by the Cabinet of Ministers on 18 September, 2005. The water transport, as one of water economy tasks, is treated exactly in the same way as in the transport policy. The above mentioned strategy discusses the use of waterways mainly in the context of protection of river valleys against flood. At the same time it is stressed that not ratifying the AGN Agreement of 1996 by Poland results in stagnation in waterway

development. Tasks planned for realisation are only limited to maintenance and modernisation of the existing waterways used for tourists purposes, taking into account the objects included to the register of monuments (the Szkarpada River and the Oder-Vistula link, among other places, but the realisation time is not clearly defined).

### **POSSIBILITIES OF DEVELOPMENT OF POLISH INLAND PORTS WITHIN THE NETWORK OF EUROPEAN WATERWAYS**

The above presented remarks also refer to the development of inland ports. It is only the port of Kostrzyn which stands some real chances for development in the nearest future. It is situated at the crossing point between a so-called Oder Transport Passage, which will be composed of: the arterial railway, the planned motorway A3 and the Oder Waterway, including links of the Oder River to the West-European waterway system via the Oder-Havel and Oder-Szprewa canals. Germany faces more and more problems resulting from reaching the limits of economic and ecologic sense of further development of motorways. Since 1992, intensive waterway modernisation projects have been in progress or planned on the territory of former DDR. Among other places they refer to: the Magdeburg centre (Project 17), modernisation of the Oder-Havel link (nearly completed) and the Oder-Szprewa link (planned realisation time – 2010-2015). The inland water navigation is expected to unlock „bottlenecks” in transportation passages and „heal” the transportation system – the water navigation is expected to take from the motorways 55 million tonnes of commodities per year. Therefore the nearest chance for Poland seems to be adopting the parameters of the Oder waterway, at its segment between Hohensaaten and Szczecin, to the parameters of modernised German waterways (class Vb). Unfortunately, neither of the above mentioned documents (Transport policy..., Water Economy Strategy) provide investments on such as big scale. Also the „Programme for Oder 2006”, realised for some recent years, only includes adopting the Oder waterway to class III parameters.



*Fig. 3. Port of Ujście on the Noteć River, out of operation for 10 years (own photo, August 2006).*



*Fig. 4. Port of Krzyż - devastated berths (own photo, August 2006).*

In general, real chances in the near future for integration of Polish waterways and inland ports situated on them should be seen in developing passenger and tourists navigation. Recently more and more towns and cities situated on waterways begin to recognise their chances for development in intensifying water related recreation and tourism. A good example here is the project „Using inland waterways for regional development (InWater)”, realised by the Gdansk University of Technology (leading partner) and 21 partners from four countries: Lithuania, Poland, Germany and Russia, within the framework of the Community Initiative INTERREG III B – Baltic Sea Region. The project aims at exchanging experience gained by particular partners, indicating directions and chances for reduction of development barriers in using inland waterways for regional development, identifying inland water connections which can be used for transport activities, promotion of best practices, and promotion of the Berlin – Kaliningrad waterway on the international forum.

The City of Gdansk (Development Programme Department) also sees its chances in activating the river network within agglomeration reach. Compared to the density of water routes the port base is extremely poor. The pride of the city – the marina on the Motława River (Fig. 5) is practically deprived of necessary land infrastructure. The remaining few ports are situated at a relatively large distance from the downtown, far from the hotels, gastronomy, and tourists attractions (Fig. 6). Therefore 26 places were selected on the territory of Gdansk as possible locations of small ports available for water tourists. The project of detailed technological designs is currently being worked out by „Hydroprojekt” in Włocławek.



*Fig. 5. Gdansk marina in Szafarnia street (own photo, August 2006).*



*Fig. 6. Yacht port on Dead Vistula River (own photo, August 2006).*

The initiative of Gdansk and Elbląg authorities is a good example for other towns situated on waterways, which were included to the European water network. Only developing the existing ports, and building new ones for tourists navigation purposes can again bring Polish water navigation routes into life.