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Conditions for the inland water transport development in Kujawy-Pomerania Province in the light of planning and strategic documents

Abstract: The paper compares plans for the inland water transport development in the Kujawy-Pomerania Province, resulting from planning and strategic documents published at the EU, national and local administration levels. Based on the analysis of the said documents and the relevant literature, solutions permitting the enhancement of inland water transport importance in Kujawy-Pomerania Province as well as the possibilities of connecting it with the national and European transport system are indicated.

Keywords: inland water transport, Kujawy-Pomerania Province, planning and strategic documents, European transport system

1. Introduction

The location of Kujawy-Pomerania Province in the transport network is favourable along the north-south axis, because it intersects with the route of Pan-European Transport Corridor VI Baltic-Adriatic (Gdańsk-Katowice), which connects the Scandinavian countries with southern Europe. Its primary axis is a fragment of the Pan-European A-1 motorway, which intersects with the A-2 motorway (Berlin-Świecko-Poznań-Łódź-Warsaw-Kukuryki) near Stryków in the vicinity of Łódź (corridor II Berlin-Warsaw-Moscow) and further with the A-4 motorway near Katowice. One of the branches of the Baltic-Adriatic corridor is national road No. 5 (corridor VIa; E-261) in the direction of (Gdańsk) Świecie-Poznań. Owing to this location, the major cities in the Kujawy-Pomerania Province (Bydgoszcz, Toruń, Grudziądz and Włocławek) are part of the TEN-T network (Węclawowicz et al., 2006) (Fig. 1).

Given the location described above, the Kujawy-Pomerania Province represents an important area in Poland, where all modes of transport have developed and road and rail routes are connected. In addition, the air

transport is also developing. Despite many years of infrastructure neglect, inland navigation also operates in the area and numerous measures have been implemented to improve the importance of this mode of transport (Falkowski et al., 2015; Habel et al., 2014; Rabant et al., 2014).

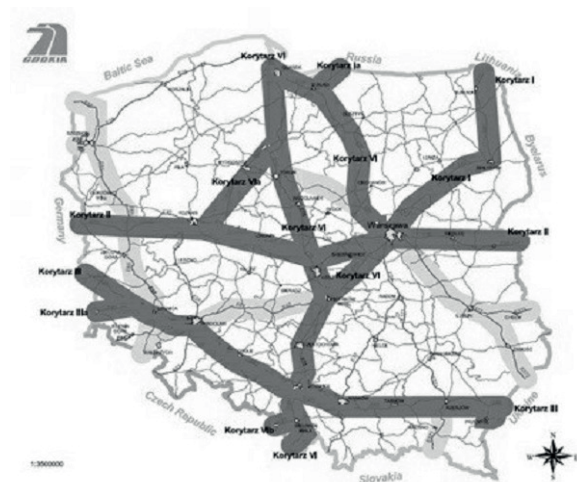


Figure 1. Transport corridors in Poland, modified. (Source: http://www.samar.pl/strefa-biznesu/polska-centrum-logistycznym-europy?locale=pl_PL)

2. Objective and scope of the study

The development of transport systems in the Kujawy-Pomerania Province has been reflected in various documents referring to the individual modes of transport. As part of the presented research, plans for the inland water transport development in the Kujawy-Pomerania Province, resulting from planning and strategic documents published at the EU and national level, were collated and analysed. The objective of this study was to present a consistent overview of plans for the inland navigation

development in the Kujawy-Pomerania Province. Provisions of documents issued at the EU, national and local administration levels have been collated and analysed within the framework of this study. They served as reference material for identifying the solutions proposed in the documents and scientific literature, which could enhance the inland water transport in the Kujawy-Pomerania Province and connect it with the Polish and EU transport system to a greater extent.

3. Conditions of the inland water transport development in Poland

Water is a crucial component of the landscape, which is commonly used by man for various purposes. One of them is the possibility to use rivers and canals for transport. According to the report prepared by the United Nations Economic Commission for Europe (White paper on Efficient..., 2011), water transport is the cheapest way of inland cargo transportation (www.wsv.de). In terms of 100 tonne-kilometres, it consumes three times less fuel than the road transport and one third less fuel than the rail transport. Furthermore, external costs related to air pollution, traffic accidents and

noise levels are very important too, and inland navigation generates up to ten times lower costs than road transport.

The total length of waterways in Poland is 3659.1 km (Rozporządzenie Rady Ministrów..., 2002). However, waterways of regional importance prevail (classes Ia, Ib, II, III). On the other hand, there are only 205.9 km of waterways with international parameters of class IV and V (ca. 6% of their total length) that permit operation of ships with a tonnage exceeding 1,250 tonnes (even up to 4,000 tonnes) (Wojewódzka-Król and Rolbiecki, 2008, 2014).

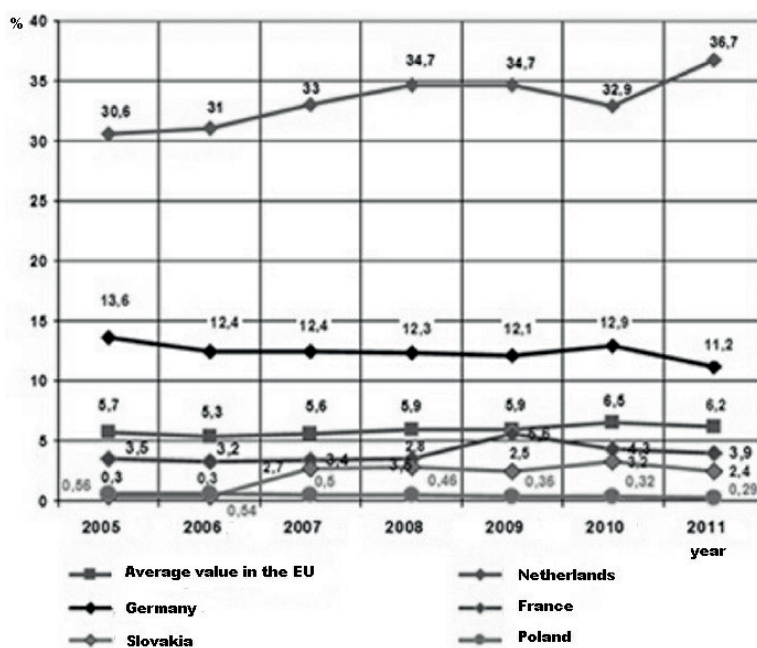


Figure 2. Contribution of inland water transport in the total land transport in selected EU counties in the period 2005-2011 (in %) (Source: NIK, Informacja o wynikach kontroli, Funkcjonowanie żegluga śródlądowej, KIN-4101-04/2013 Nr ewid. 188/2013/P/13/079/KIN)

Such a status quo directly contributes to the difficult conditions of the transport organisation via waterways and hence the importance of inland water transport in the total transport is low and accounts for only 0.3–0.4% (Fig. 2.) (NIK, Informacja o wynikach kontroli..., 2013). Moreover, this makes it unprofitable to invest in new fleets.

Already since the Middle Ages, the Vistula River has been the main artery in the transport of goods (also for the present Kujawy-Pomerania Province) (Bartczak and Gierszewski, 2012). Despite seasonal changes in the transport intensity, resulting from historical factors, the decline in the transport occurred only in the early 1980s. In 1980, 22 million tonnes, in 2000 – 10.4 million tonnes, while in 2013 – only 5 million tonnes of goods were transported in Poland by inland water transport (Opracowanie sygnałne: Transport wodny..., 2015). For example, no ship loaded with goods has been navigated through the Bydgoszcz Canal since 2008 (Rabant and Zieliński, 2009).

The location of Kujawy-Pomerania Province in the Polish inland waterway system

is exceptionally favourable. The construction of the Bydgoszcz Canal resulted in a water junction (Fig. 3) connecting the Eastern European and Western Europeans systems of inland waterways (Studium uwarunkowań i kierunków..., 2009). Two routes of European importance intersect there: E-70 (from Gdańsk upstream the Vistula to Warsaw and further via the Bug to Brestand through Polesie towards the Dnieper) and E-40 (from Antwerp to Klaipeda – through the Netherlands, Germany, Poland, Russia to Lithuania). The territory of Poland features also the E-30 route running via the Oder Waterway, which connects the Baltic Sea in Świnoujście with the Danube in Bratislava.

The Bydgoszcz Water Junction waterways are the Brda and the Vistula rivers as well as the Bydgoszcz Canal together with the so-called Old Bydgoszcz Canal. The Brda River (channeled section) and the Bydgoszcz Canal are classified as navigable inland waterways of class II. The Vistula River along the section running through Kujawy-Pomerania Province currently meets the parameters of class I and II.



Figure 3. Bydgoszcz Water Junction in relation to the main water corridors in Europe

Source: Program Rewitalizacji i Rozwoju Bydgoskiego Węzła Wodnego, Miejska Pracownia Urbanistyczna w Bydgoszczy (Source: Wroński, 2011)

The “E” designations of waterways indicate that they are included on the list of the major European routes as a result of the AGN Agreement of 1996 (European Agreement on Main Inland Waterways of International Importance)

concerning the European system of waterways as part of the Trans-European Transport Network (TEN-T). The network recognised in the AGN Agreement is divided into nine primary water transport routes with the length exceed-

ing 27,000 km and connects the ports of 37 European countries. The purpose of the AGN Agreement is to introduce a legal framework that would establish a coordinated plan for the development and construction of international inland waterway networks based on the agreed infrastructure and operational parameters. Unfortunately, the waterways in Poland, except for short sections along the Lower Oder and the Lower Vistula, do not meet the minimum international requirements for navigability specified by the AGN Agreement (navigability class IV).

4. Water transport development in planning and strategic documents

Planning and strategic issues related to waterways are included in a number of documents at the national, sub-regional, regional and local levels (Muszyńska-Jeleszyńska and Marciniak, 2016).

On 14 June 2016, the Council of Ministers adopted the document entitled: “Założenia do planów rozwoju śródlądowych dróg wodnych w Polsce na lata 2016-2020 z perspektywą do roku 2030” (Assumptions for the Plans of Inland Waterway Development in Poland for 2016–2020 with a Perspective until 2030; www.mgm.gov.pl/185-konferencja-prasowa-strategia) The primary guidelines contained in this document is the upgrade of the Polish waterways (E-30, E-40, E-70) to the parameters of at least navigability class IV, which results from the AGN Convention (in UN documents).

The priorities included in the strategy are as follows (Założenia Do Planów Rozwoju Śródlądowych Dróg Wodnych, 2016):

- Oder Waterway (E-30) – achieving the international class of navigability and inclusion in the European waterway network;
- the Vistula River Waterway – achieving a considerable improvement of navigation conditions;
- Oder–Vistula–Vistula Lagoon and Warsaw–Brest connections – expansion of E-70 and E-40 waterways;
- Development of partnership and cooperation for inland waterways.

The estimated costs of construction and upgrade of the selected Polish inland waterways in terms of adapting them to parameters of international shipping routes vary

In 2016, the Ministry of Maritime Economy and Inland Navigation (established in 2015) implemented some measures aimed at Poland’s accession to the AGN Agreement. As a result, on 15 December 2016, the Sejm of the Republic of Poland adopted the Act on accession to the European agreement on main inland waterways, which was signed on 23 January 2017 and subsequently ratified on 27 March 2017 by the President of the Republic of Poland.

depending on the adopted concept and variant and are as follows (www.mgm.gov.pl/185-konferencja-prasowa-strategia):

- Oder Waterway, along with the Gliwice Canal and Oder–Danube connection – between 16.5 and 22.6 bn PLN;
- the Middle and Lower Vistula from Warsaw to Gdańsk – ca. 31.5 bn PLN;
- the Silesian Canal – ca. 11.00 bn PLN;
- Warsaw-Brest waterway – between 8.1 and 25.5bn PLN.

Poland will apply to the European Commission to include the Oder and the Vistula in the network of European transport corridors. The European Union is planning to revise the transport corridors in 2017. If the Polish waterways are included in the European network, it will be possible to apply for financial support amounting to 85% of the project value.

The funds invested in the waterway will serve not only navigation but also other important economic functions (www.mgm.gov.pl/185-konferencja-prasowa-strategia). They are supposed to fulfil flood control, industrial, municipal, agricultural and forestry, sports & recreation functions. Furthermore, the constructed barrages will serve as road crossings and for electricity generation.

Along with the improvement of the operational parameters of the waterways, the importance and contribution of inland navigation in the transport services market will increase (www.mgm.gov.pl/185-konferencja-prasowa-strategia). According to expert estimates, the transport volume will increase by 2020 to 20 million tonnes on the Oder Waterway. The

estimated growth of transport volume on the E-30 waterway in the long term is 25 million tonnes. It was assumed that already after the first stage of the upgrade of the Lower Vistula consisting in regulation, the volume of cargo transport by inland navigation could amount to 7.8 million tonnes, in relation to seaports.

On 28 March 2011, the European Commission (EC) presented a White paper (White paper, Road map..., 2011). The plan providing for the establishment a single European transport area (NIK, Informacja o wynikach kontroli..., 2013) contained in the document specifies, inter alia, the following:

- transport development should be sustainable;
- congestions are a major challenge, in particular on roads and in airspace and have a negative effect on accessibility;
- by 2030, 30% of road freight transport at distances greater than 300 km should be transferred to other modes of transport (rail or water transport), and by 2050, it should be more than 50%. In order to achieve this target, relevant infrastructure shall be expanded;
- initiatives should also include the establishment of an appropriate framework for optimising the internal market of inland water transport and the elimination of barriers to increase the use of this type of transport.

On 10 September 2013, the EC presented an Integrated European Action Programme for Inland Waterway Transport (NAIADES II), aimed at increasing the cargo transport via inland waterways with a simultaneous improvement of the quality of this transport (NIK, Informacja o wynikach kontroli..., 2013).

The current measures are in line with the assumptions of the Strategy of Transport Development until 2020 (with a Perspective until 2030) (Strategia rozwoju transportu..., 2013), adopted by the Council of Ministers on 22 January 2013. It provides for the following directions of intervention with reference to inland water transport infrastructure, which are to be implemented through:

- achieving and maintaining such navigation conditions on waterways that are specified in the European classification of inland waterways;

- improving the navigation conditions and upgrading the infrastructure on waterways of tourism importance;
- development of inland waterway infrastructure, together with the improvement of waterway operational parameters as part of improving the access to seaports;
- creation of a modern inland waterway infrastructure with stable conditions for local and regional transport;
- adaption of the infrastructure of specific Polish inland waterways or their sections to the requirements of the European waterway network;
- striving for conditions that facilitate the use of environmentally-friendly modes of cargo transport at distances greater than 300 km.

The Strategy provides for the following measures in the long-term development perspective of Polish inland waterways, divided into two stages (Strategia rozwoju transportu..., 2013).

The first stage by 2020:

- preparation and commencement of a multi-annual programme concerning the restoration of operational parameters along the inland waterways that fulfil the transport function;
- making a decision concerning the construction of Danube–Oder–Elbe (DOE) inland waterway that would meet the requirements of at least navigability class IV;
- making a decision concerning the construction of the Silesian Canal as a consequence of the DOE project;
- making a decision concerning the preparation and implementation of a programme providing for the inclusion of the Oder Waterway in the European transport network;
- the Lower Vistula development (urgent due to the threat to the safety of the Włocławek barrage);

The second stage by 2030:

- continuation of the multi-annual programme concerning the restoration of operational parameters of the inland waterways that fulfil the transport function;
- adaptation of the Oder–the Vistula–Vistula Lagoon inland waterway (E-70) to the requirements of at least navigability class II;
- possible implementation of a programme providing for the integration of the Oder

Waterway into the European transport network.

Furthermore, the objectives of the Transport Development Strategy indicate development priorities in the establishment of conditions for efficient operation of transport markets and development of effective transport systems (Strategia rozwoju transportu..., 2013). The River Information Services (RIS) will be implemented in the inland water transport to increase the navigation traffic safety and to increase the inland water transport efficiency through quick exchange of information on inland waterways of international importance. The obligation to implement the RIS results from Directive 2005/44/EC of the European Parliament and of the Council of 7 September 2005 on harmonised river information services (RIS) on inland waterways in the Community (Commission Regulation (EC) No. 414/2007, Directive 2005/44/EC).

The provisions concerning the upgrade of waterways have also been included in the Strategy for Kujawy-Pomerania Province Development until 2020 – Upgrade Plan 2020+ (Strategia rozwoju transportu..., 2013). The strategic objective “Economy and jobs” provides for such needs as: development of technical infrastructure for the purpose of economic development, and development of logistic potential of the region. Whereas the section “so far identified undertakings” stipulates the following:

- comprehensive tourist development of the Włocławek Reservoir and other related areas;
- development of the region’s logistics potential.

The “availability and cohesion” strategic objective puts a strong emphasis on restoring the importance of waterways for transport purposes (in particular E-40 IW) but also on their use for tourism (in particular E-70IW, the Great Waterway Loop of Wielkopolska, the Noteć Canal, the Noteć upstream of Nakło) (Strategia rozwoju transportu..., 2013). The water transport development will enable full development of the idea of multimodal transport, whose primary junction should be a terminal (multimodal platform) in the vicinity of Solec Kujawski – Bydgoszcz Łęgnowo. Cooperation between local authorities of Bydgoszcz and Solec Kujawski is necessary to select the

optimum location and optimum principles for the implementation of the project in order to pursue the interests of both cities and to increase the chance of successful implementation of this undertaking. Such measures are to be undertaken within the whole railway network to adapt or increase the existing capacity of selected stations for cargo handling – the goal being the construction of a multimodal transport system for cargo transport.

The major cities of Kujawy-Pomerania Province are located by inland waterways, so their connections with rivers are also reflected in the development strategies of individual cities.

The Strategy of Włocławek invokes transport issues related to water in the “Vision” section by indicating that Włocławek 2020+ is: a city of sustainable development, friendly to live, characterised by high quality social services (Strategia rozwoju miasta Włocławek 2020+, 2014): making use of tourism qualities, in particular the water resources of the Włocławek Reservoir.

The Strategy of Toruń Urban Development by 2020 was adopted in 2010 (Strategia Rozwoju Miasta Torunia do roku 2020 2010). It refers to waterway-related issues in strategic objective No. 4: Toruń is a city that protects its cultural heritage and develops the cultural sphere and tourism economy. Management of the Vistula quays, including development of the Kępa Bazarowa nature reserve.

The city of Bydgoszcz refers to the issues of inland water transport development in several places of the adopted Strategy of Bydgoszcz Urban Development by 2030 (Strategia Rozwoju Bydgoszczy do 2030 roku, 2013). The Strategy provides for, inter alia, the development of modern and functional technical infrastructure and spatial governance in accordance with the principles of sustainable development. One of the major components of the urban substance is transport (road, rail, air, water) infrastructure and technical infrastructure. Issues of water transport and revitalisation of areas connected with water are also included in the following sectoral programmes: *Bydgoszcz sprawna komunikacyjnie* (Bydgoszcz with Efficient Transport), *Bydgoszcz na fali* (Bydgoszcz on the wave), *Miasto nauki* (City of Science).

The following planned undertakings (programmes) are listed:

- Activation of the Bydgoszcz Water Junction by improving the navigation conditions and constructing the necessary infrastructure (Development of infrastructure of E-70 and E-40 international waterways together with expansion and upgrade of the Bydgoszcz Water Junction, which is unique on the European scale);
- Measures aimed at creation of intermodal rail-road-water, road-air logistics centres;
- Revitalisation of inner city areas that enhances the tourism and recreation functions, and protection of cultural heritage, with particular emphasis on areas in the immediate vicinity of the Bydgoszcz Canal and the Old Bydgoszcz Canal;
- Development of the riverside areas of the Bydgoszcz Water Junction and provision thereof with recreational infrastructure;
- Promotion of the current and future assets of the Bydgoszcz Water Junction;
- Development of academic and teaching resources: Kazimierz Wielki University: Waterway Revitalization Centre, Waterway Revitalization Offices in Cities, National Waterway Development Incubator –

expansion of the Waterway Regeneration Department.

Also the Strategy of Grudziądz Urban Development for 2016-2023 (Strategia Rozwoju Miasta Grudziądza, 2016) contains references to the Vistula and water transport. The “Diagnosis” chapter includes the following provisions: Water transport and inland navigation. One of the major river transport routes of Europe in the past, the Vistula river is currently basically not used. Grudziądz (...) has considerable potential for the development of navigation for tourism and transport purposes.

Grudziądz, which belongs to *Związek Miast Nadwiślańskich* (Association of Vistula River Cities), should support similar initiatives that serve revival and promotion of environmentally-friendly river transport and inland navigation along the river and its tributaries, since the proximity of the river, if properly utilised, might prove a strong development factor of the city and its surroundings. The favourable location of Grudziądz in the traffic and transport network provides the city also with easy access to the largest seaports in Poland.

5. Proposals to enhance the inland water transport importance in Kujawy-Pomerania Province

With reference to the directions of transport development in Poland specified in various documents, in terms of integration with the European transport system and adaptation to the European Union standards, the emphasis should be put on strengthening the inland water transport in the total cargo transport in Kujawy-Pomerania Province and in the total transport volume between the regions of Pomerania, Warmia and Masuria and Mazovia. This objective will be achievable through, inter alia, construction of a multimodal port (a multimodal platform) near Bydgoszcz – Solec Kujawski (Habel et al., 2014) and its integration with the rail and road network (construction of rail and road connections will necessary). These measures should be implemented simultaneously with the upgrade of the Tricity-Kujawy-Pomerania Province rail network, as only such a solution will make it possible to take over the constantly growing cargo traffic, and Kujawy-Pomerania Province may in

the future become one of the significant centres for container transport handling in Poland.

These measures might indirectly contribute to enhancing the importance of the Airport in Bydgoszcz. Its integration with all modes of transport (linking with multimodal platforms) may lead in the future to the development of CARGO services (Plany rozwoju infrastruktury transportowej..., 2017). This would provide an opportunity to specialise in this field not only on the local but also on the national level.

Moreover, it seems appropriate to construct or upgrade the existing ports and smaller quays in the major cities of the region (Włocławek, Toruń, Bydgoszcz and Grudziądz) in order to activate internal inland water transports and the resources and infrastructure of these cities. It is also important to implement these solutions in the towns located at E-70 IW, the Great Waterway Loop of Wielkopolska, the Noteć Canal and the Noteć.

The continuous enhancement of tourism functions related to waterways (in particular E-40 IW, E-70 IW) seems an appropriate approach of the authorities. Water courses and their existing and planned infrastructure (e.g.: marinas in Toruń, Grudziądz, Nakło nad Notecią) are used in the whole region.

The extensive research currently carried out on the effects of waterway development, based on the case of the Lower Vistula (Wojewódzka-Król and Rolbiecki, 2017), indicates the possibility of achieving considerable benefits from such activities.

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References

- Bartczak A., Gierszewski P., 2012. Możliwości wykorzystania dolnej Wisły dla celów żeglugowych. [In:] Szumińska D. (Eds.), *Rewitalizacja dróg wodnych szansą dla gospodarki*. Promotio Geographica Bydgosiensia, UKW, Bydgoszcz.
- Commission Regulation (EC) No 414/2007 of 13 March 2007 concerning the technical guidelines for the planning, implementation and operational use of river information services (RIS) referred to in Article 5 of Directive 2005/44/EC of the European Parliament and of the Council on harmonised river information services (RIS) on inland waterways in the Community .
- Directive 2005/44/EC of the European Parliament and of the Council of 7 September 2005 on harmonised river information services (RIS) on inland waterways the Community.
- Falkowski J., Ilieva M., Józefowicz I., Rabant H., 2015. Bydgoszcz and its surroundings at the beginning of the 21st century. Selected aspects. Wydawnictwo Uniwersytetu Kazimierza Wielkiego, Bydgoszcz [In Polish with English abstract].
- Habel M., Rabant H., Babiński Z., Szatten D., Marciniak Ż., Gierszewski P., 2014. Determinants of locating multimodal port on the lower Vistula River in the vicinity of Bydgoszcz. *Logistyka* 6 (artykuł dostępny na płycie dołączonej do czasopisma DVD (nr 3), 4411-4420) [In Polish with English abstract].
- Muszyńska-Jeleszyńska D, Marciniak Ż, 2016. Concepts of the lower Vistula development in the light of the selected planning and strategic documents. *Gospodarka Wodna* 8, 244-249 [In Polish with English abstract].
- NIK, Informacja o wynikach kontroli, Funkcjonowanie żeglugi śródlądowej, KIN-4101-04/2013 Nr ewid. 188/2013/P/13/079/KIN [In Polish].
- Opracowanie sygnałne: Transport wodny śródlądowy w Polsce w 2014 r., 2015. Główny Urząd Statystyczny, Warszawa [In Polish].
- Plany rozwoju infrastruktury transportowej w województwie kujawsko-pomorskim w latach 2017-2023, 2017. Kujawsko-Pomorski Urząd Wojewódzki w Bydgoszczy [In Polish, unpublished material].
- Rabant H., Habel M., Babiński Z., 2014. Ferry crossing on the Vistula River in Solec Kujawski – design and realization. *Logistyka* 6, DVD 3, 9033-9044 [In Polish with English abstract].
- Rabant H., Zieliński K. 2009. Znaczenie transportowe Kanału Bydgoskiego. [In:] Szumińska D. (Eds.), *Walory turystyczne drogi wodnej E-70 na terenie województwa kujawsko-pomorskiego*. Urząd Marszałkowski Województwa Kujawsko-Pomorskiego, Instytut Geografii UKW, Bydgoszcz, 156-159 [In Polish].
- Rozporządzenie Rady Ministrów z dnia 7 maja 2002 roku w sprawie klasyfikacji śródlądowych dróg wodnych, Dz. U. 2002 nr 77 poz. 695 [In Polish].
- Strategia Rozwoju Bydgoszczy do 2030 roku, 2013. Uchwała Nr XLVIII/1045/13 Rady Miasta Bydgoszczy z dnia 27 listopada 2013 roku [In Polish].

- Strategia Rozwoju Miasta Grudziądza na lata 2016-2023, 2016. Uchwała nr XVIII/8/16 z dnia 24 lutego 2016 roku [In Polish].
- Strategia Rozwoju Miasta Torunia do roku 2020, 2010. Uchwała Rady Miasta Torunia nr 935/2010 z dnia 4 listopada 2010 roku [In Polish].
- Strategia Rozwoju Miasta Włocławek 2020+, 2014. Załącznik do uchwały Nr XLI/26/2014 Rady Miasta Włocławek [In Polish].
- Strategia Rozwoju Transportu do 2020 roku (z perspektywą do 2030 roku) Warszawa, dnia 22 stycznia 2013 r. Ministerstwo transportu, budownictwa i gospodarki morskiej [In Polish].
- Węclawowicz G., Bański J., Degórski M., Komornicki T., Korcelli P., Śleszyński P., 2006. Spatial organization of Poland at the beginning of the 21st century. IGiPZ PAN, Warszawa [In Polish with English abstract].
- White paper, Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system, 2011. European Commission, Brussels 28.3.2011, Comnat: com_2011_0144_Fin.
- White paper on Efficient and Sustainable Inland Water Transport in Europe, (raport ECE/TRANS/SC.3/189), 2011. United Nations Economic Commission for Europe (UNECE), New York–Genewa.
- Wojewódzka-Król K., Rolbiecki R., 2008. Mapa śródlądowych dróg wodnych, Diagnoza stanu i możliwości wykorzystania śródlądowego transportu wodnego w Polsce. Sopot [In Polish].
- Wojewódzka-Król K., Rolbiecki R., 2014. Transport wodny śródlądowy, Funkcjonowanie i rozwój. WUG, Gdańsk [In Polish].
- Wojewódzka-Król K., Rolbiecki R., 2017. Socio-economic impact of the development of the lower Vistula, Acta Energetica, Energa SA, Gdańsk [in Polish and English].
- Wroński S., 2011. Program rewitalizacji i rozwoju bydgoskiego węzła wodnego. Miejska Pracownia Urbanistyczna w Bydgoszczy [In Polish, unpublished material].
- Założenia Do Planów Rozwoju Śródlądowych Dróg Wodnych w Polsce na lata 2016-2020 z perspektywą do roku 2030 Ministerstwa Gospodarki Morskiej i Żeglugi Śródlądowej, 14 czerwca 2016 r. [In Polish].

Internet sources

- www.mgm.gov.pl/185-konferencja-prasowa-strategia-rozwoju-srodladowych-drog-wodnych-w-polsce, (26.06.2016).
- www.samar.pl/strefa-biznesu/polska-centrum-logistycznym-europy?locale=pl_PL, (14.06.2017).
- www.wsv.de/Schiffahrt/Binnenschiff_und_Umwelt/index.html, (20.06.2017).