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THE ECONOMIC POTENTIAL OF THE POMERANIAN VOIVODESHIP AS A PREMISE FOR THE REVITALIZATION OF INLAND WATERWAYS

Abstract

Each region of Poland has a potential that should be used for economic development. The primary advantages of the Pomeranian Voivodeship include coastal location, positioning at the mouth of the Vistula River to the Gulf of Gdańsk, possessing high density of inland waterways and diversity of landscape. The area has favourable conditions for the development of, among others, ports and tourism. There are two seaports in the Pomeranian Voivodeship in Gdańsk and Gdynia. The Port of Gdansk is one of the largest ports on the Baltic Sea and the largest in Poland. The tourism sector is also dynamically advancing in the voivodeship, increasingly making use of the natural potential of the region by offering various types of sports and recreational activities. The aim of this article is to assess the condition of, and to identify, selected factors of economic development which determine the revitalization of inland waterways in the Pomeranian Voivodeship.

Keywords: regional development, economic potential, seaports, tourism, inland water transport

JEL: O1

Introduction

Pomeranian Voivodeship is characterized by a high density of inland waterways (7.8 km / 100 km²). The Vistula is the largest river in the region, which connects the Tri-city agglomerations (Gdańsk, Sopot, Gdynia) with central Poland and other urban centres located along the river. The Lower Vistula is also an important section of two international inland waterways: E-40 (Baltic Sea-Black Sea) and E-70

(Antwerp-Klaipeda). Despite the enormous economic potential, including transport and the location of the largest seaport in its mouth to the Gulf of Gdańsk, the Vistula is the largest undeveloped river in Europe.

Numerous smaller rivers, of regional significance, are often a tourist attraction. Water resources of rivers are used for active water tourism (among others: kayaking, sailing). Tourism, next to the maritime sector, is one of the main pillars of the region's economy. The purpose of the article is to assess the current state of the region's economy, regarding, first and foremost, the turnover of seaports and the tourism sector, and to show the relationship between the development of these sectors and the revitalization of inland waterways in the Pomeranian Voivodeship.

1. Methodology and theory

When analyzing the economic potential of the Pomeranian Voivodeship, the desk research method was used, which included analysis of statistical data. The data presented in the paper may be further used by market stakeholders or policy makers.

2. Results

The most important applications include:

- one of the most necessary sectors of the Pomeranian economy is maritime trade and tourism,
- port development requires extensive infrastructure expenditure
- development of inland waterways increases the attractiveness of the region
- inland navigation on the Vistula is poorly developed

3. Discussion

3.1. Characteristics of the Pomeranian Voivodeship

Pomeranian Voivodeship is one of the 16 provinces of Poland established on January 1, 1999. It is the northernmost regional governmental body in the country. The voivodeship covers 18 310 km² and has a population density of 127 people per km² (as of 2017), higher than the national average by four persons per km² (Statistical Yearbook of the Region, 2018). The region is characterized by a substantial diversity of population distribution with over 64% of the population residing in cities, including about 48% in the Tri-city itself.

The fundamental feature of the province is its coastal location at the mouth of the Vistula to the Gulf of Gdansk. The region covers the Vistula Spit, an elevation

below the sea level in Żuławy, an elevation in the Central European Lowlands, the Lower Vistula Valley, Pobrzeże and Pojezierze Pomorskie, and the Hel Peninsula.

The Pomeranian Voivodeship is one of the most water-rich provinces. The voivodeship's water potential consists of 60% of the Polish coastal sea line, over 450 lakes, the Vistula Lagoon, and about 2,300 km of rivers. The largest rivers in the region include navigable waterways:

- Martwa Wisła (11.5 km, klasa Vb),
 - Nogat (62 km, klasa II),
 - Szarpawa (25.4 km, klasa II) [Drogi]
- and rivers of local significance, including:

- Wierzyca (177 km),
- Łupawa (112.9 km),
- Liwa (88.7 km),
- Radunia (87.4 km),
- Motława (42.2 km),
- Wisła Królewiecka (11.5 km) (Rocznik Statystyczny Gospodarki, 2018).

Most of the rivers compose the Vistula basin, which defines the main axis of inland waterway transport in the Pomeranian Voivodeship. The Vistula, especially its lower section, plays a vital role in the region, the country, and all of Europe. It is part of the network of international waterways in Europe:

- E-70 connecting Antwerp (Holland) with Klaipeda (Russia) through Odra, Warta, Vistula waterway – Odra, lower Vistula, Szarpawa, the Vistula Lagoon;
- E-40 connecting the Baltic Sea with the Black Sea (European, 1996).

It connects the Tri-city agglomeration and the seaports of Gdańsk and Gdynia with central Poland as well as other urban centres located along the Vistula.

The geographical location of the voivodeship affects the multifunctional character of the region. Nearly every type of economic activity has developed here. In 2017, the largest number of registered entities was in the sectors of trade and repair of motor vehicles (26%), construction (16%), and industry (15%). Over 65% of all the employed in the voivodeship were in these sectors (Statistical Yearbook of the Region, 2018), and these industries have the most significant impact on the gross value added of the region and GDP. Since 2000, the Pomeranian Voivodeship ranks seventh in terms of GDP, which accounts for about 6% of the country's GDP, and fifth in terms of GDP per capita (Krzyżaniak, 2019).

When it comes to the business environment, small and medium-sized enterprises dominate, which indicates high activity of residents, especially in the services sector (Strategy, 2012). Increased activity of residents is reflected in the drop in the unemployment rate (from 13.2% in 2013 to 4.9% in 2017) and the high rate of newly registered enterprises (per 10,000 residents). Since 2011, the index of newly registered enterprises for provinces is higher in the Pomeranian Voivodeship than the national average by about 20%. The relationships in the scope of investment outlays, expenditures on research and development, and the implementation of product innovations are also taking a positive shape, especially in small and medium-sized enterprises.

In spite of favourable macroeconomic indicators when it comes to the whole voivodeship, there are significant disproportions at the local level. This results

from diverse geographical conditions and the concentration of economic activity in selected subregions. Subregions of particular economic importance for the province include the Tri-City agglomeration and the coastal area due to seaports and attractive tourist areas.

3.2. Cargo turnover in seaports of the Pomeranian Voivodeship

There are 33 seaports in Poland, including 12 in the Pomeranian Voivodeship: Gdańsk, Gdynia, Hel, Władysławowo, Puck, Jastarnia, Kąty Rybackie, Krynica Morska, Pisaki, Ustka, Łeba, and Rowy. Two commercial ports from the Pomorskie Voivodeship in Gdańsk and Gdynia and two from the West Pomeranian Voivodeship in Świnoujście and Szczecin have strategic importance for Poland. Other ports do not play a significant role in the Polish economy. Most of them perform fishing, sailing or passenger shipping functions. In several ports, including Police, Kołobrzeg, Darłowo and Elbląg, the reloading and storage functions, characteristic of large commercial ports, have been developed, yet their share constitutes only about 2.5% of all cargo traffic in Polish seaports.

The turnover in Polish seaports in 2010-2018 rose by over 50% (from 60 million tonnes to 92 million tonnes of cargo). The port of Gdansk has the largest share in the turnover among Polish seaports, 46% (Figure 1), handling 68% of transit cargo. The main countries of sea-land and land-sea transit are the Czech Republic (42.6%), Germany (23.3%) and Slovakia (19.7%). The cargo with the largest share in the turnover includes container, liquid bulk (including crude oil and petroleum products) and dry bulk (including coal and coke) (Statistical Yearbook of Economy, 2018).

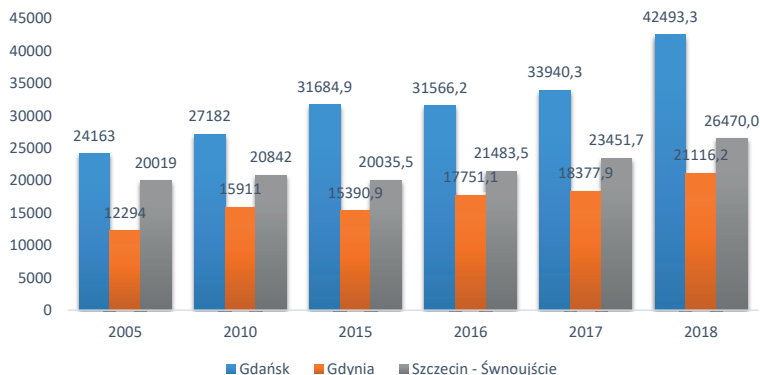


Figure 1 Transshipments in Polish seaports

Source: (own elaboration based on data available at: *Gospodarka morską w Polsce w 2018*. GUS. Informacje sygnałowe. 26.04.2019)

Transshipment of containers in 2018 accounted for 45% of the total amount of all cargo handling at the Port of Gdansk, which is one of the 20 largest container ports in Europe thanks to the North Port DCT Container Terminal. In 2018, 1.93 million TEUs were reloaded at the DCT container terminal (increase in turnover

by 20% compared to 2017). DCT Gdansk regularly serves the largest container vessels (20,000 TEU) in the world. The port serves as a so-called container hub on the Baltic Sea.

The port in Gdansk covers an area of 3,410 ha and is divided into two areas: an internal port (called New Port, with a maximum transshipment capacity of 13.6 million tonnes) and an external port (called the Northern Port, with a maximum transshipment capacity of 85.6 million tonnes) (Information). The internal port, located along the Martwa Wisła and the port channel, is adapted to serve ships with a max. immersion depth of 10.2 m, a width of 90 m and a length of 225 m. The port has a container terminal (Gdansk Container Terminal GTK), the base, and a terminal for passenger ferries and ro-ro vessels, and a quay for general cargo handling and bulk cargo.

The North Port (external) is located in the immediate vicinity of the Gdynia Bay and adapted to service ships with a maximum immersion depth of 15 m and a length of 670 m. The port operates a specialized base for servicing energy fuels and deepwater container terminal (DCT). In the vicinity of DCT, there is also a Pomeranian Logistics Centre offering rental of warehouse and office space.

There's a plan to build the Central Port of Gdansk in the North Port by 2028, which would be an extension of the existing port infrastructure towards the sea. The proposal includes terminals for servicing, among others, passengers, ro-ro cargo, bulk and general cargo (Central Port).

The port in Gdynia covers an area of 755 ha. It is adapted for servicing ships with a maximum immersion depth of 13.5 m and a maximum length of 330 m. The primary groups of cargo handled in the port include containers, grains, ro-ro general cargo, and bulk cargo. The port in Gdynia is in close proximity to the urbanized areas of the city. Moreover, the formation of the terrain in the area and its spatial development plan significantly limit and sometimes even make it impossible to expand the port. However, investment works are being carried out inside the port, the purpose of which is to widen and deepen the approach fairway and the sea basins inside the port so that vessels with an immersion depth of up to 15 m and a length of 400 m can call at the port (Port of Gdynia).

The size of transshipments in sea ports of Gdańsk and Gdynia is influenced, among other things, by their central location on the southern coastline of the Baltic Sea. The Tri-City seaports are a very important hub on the north-south axis, included in the Trans-European Transport Corridor no. VI, which connects the Scandinavian countries with the Adriatic Sea (Trans-European). The coastal location enables a more effective economic cooperation in the Baltic Region as well as cooperation with neighbouring countries that do not have access to the sea, such as the Czech Republic, Slovakia, Ukraine, Belarus, and Hungary.

An inherent ancillary transport infrastructure of the seaports of Gdańsk and Gdynia is the road and railway network of national and international relevance. The most important road connections include the A1 motorway, which is eventually supposed to connect the Tri-City with Gorzyczki and the national road E7 between Gdańsk and Chyżne (Figure 2). The road infrastructure, despite intensified investment works in 2004-2018, still does not create a coherent network. Motorways and expressways constitute about 16% of national roads, the condition

of which at the end of 2018 was considered good in 60%, unsatisfactory in 22%, bad in 14% (Report, 2019). The railway infrastructure, due to its low technical condition and numerous limits on speed and capacity, creates a barrier to the development of the seaports

The Port of Gdansk, as already mentioned earlier, is located in the estuary of the Vistula River. However, despite the convenient connection and favorable natural layout of the river in the north-south relation, transport by inland waterways is incidental due to the Vistula's maladjustment to transport needs.



Figure 2. National road network (as of 23.05.2019)

Source: Sieć dróg krajowych w Polsce, GDDKiA, https://www.gddkia.gov.pl/frontend/web/userfiles/articles/s/siec-drog-krajowych-w-polsce_6848/mapa_1_siec_dk_23_05_19.pdf

The existing ancillary infrastructure of the Tri-City seaports may hamper further development of seaports and the region itself, especially since maritime transport plays a critical role in the era of globalization and growing trade between continents while increasing turnover in seaports requires an infrastructure ensuring smooth flow of cargo to and from the port. The forecast of transshipments for Polish seaports predicts, by 2020, the largest increase in container turnover, between 15–75%, as well as crude oil and petroleum, between 3-31% (Figure 3) – loading groups especially important for the Port of Gdansk.

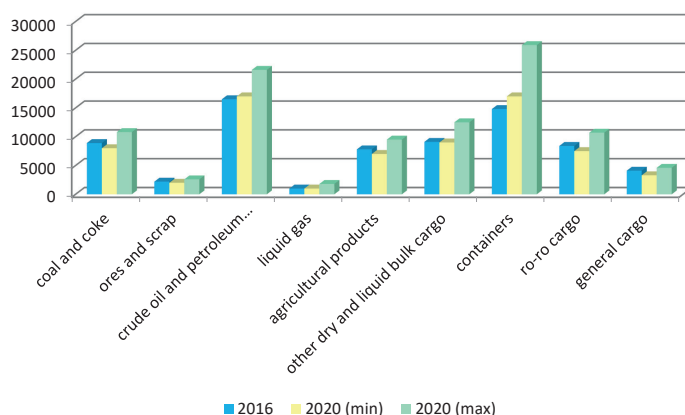


Figure 3. Transshipment forecast for selected product groups in Polish seaports

Source: (own elaboration based on data available at: Program rozwoju polskich portów morskich do roku 2020 (z perspektywą do 2030 roku). Ministerstwo Gospodarki Morskiej i Żeglugi Śródlądowej. Warszawa 2017, s. 55-66

3.3. Tourism in the Pomeranian Voivodeship

An essential area of the region's economy is also tourism, which stimulates the socio-economic development of the region and the country. According to the research conducted by the Pomeranian Regional Tourist Organization in 2017, the Pomeranian Voivodeship was the most frequently chosen region for national tourism in Poland. In 2016 and 2017, the number of tourists visiting the province amounted to about nine million and was the highest in the last decade (Gospodarka, 2018).

In the voivodeship, in the years 2005-2017, the number of tourist overnight accommodation facilities (table 1) rose by 100%, and the number of overnight accommodation units rose by 30%. Also, the number of people using overnight accommodations has doubled. In 2017, one out of every three tourists visiting the Pomeranian Voivodeship used overnight accommodations.

Table 1. Accommodation base for tourism in the Pomeranian Voivodeship

Details	2005	2010	2015	2017
Overnight accommodation facilities	788	802	1 512	1 629
Overnight accommodation units	85 348	80 178	101 739	114 369
Annual	27 914 (32%)	34 170 (43%)	41 617 (38%)	44 600 (39%)
Consumers of overnight accommodation	1 345 074	1 628 830	2 439 185	2 863 071
International tourists	293 811	259 906	451 860	559 741

Source: (own elaboration based on data available at: Rocznik Statystyczny województwa pomorskiego (Annual statistics of Pomeranian Voivodeship) 2018, GUS, Warszawa 2018;

Pomeranian Voivodeship is characterized by high (8.57) indicator of tourism attractiveness in terms of culture, environment, and business-hotel travel (Analysis of advantages, 2017). Regions that have a significant impact on the tourist attractiveness index are: the city of Gdańsk, Sopot, Gdynia and the most important objects of the region, including:

- castles in Malbork, Kwidzyn, Gniew,
- churches and cathedrals,
- walking (promenade) and recreation areas along the Vistula waterfront,
- numerous nature conservation parks, including Mewia Łacha and Ujście Wisły.

An important asset of the region is also the location in the coastal belt of the Baltic Sea and the Vistula Delta, and offerings of numerous forms of activities on the water from boat trips to kayaking or kite-surfing.

In the area of the city of Gdańsk, there are favourable conditions for the development of inland waterway transport. There are 12 marinas, three water jetties and ten water-bus stops operating here. In the summer season from May to June, there are water-tram or small passenger ship cruises offered on the 109 km-long shipping route. The main purpose of these offers is to create opportunities to explore the city by water. In 2012, 11,375 passengers used the water-tram transport offer, in 2016 – 47,240, and in 2018 – 65,627 passengers (Record season, 2018).

Cruises by passenger ships or catamarans are also offered, among others, on the Bay of Gdańsk, the Vistula Lagoon, and the Łebsko Lake. Additionally, kayaking excursions are also offered on the extensive network of rivers (2000 km) and lakes of the Pomeranian Voivodeship. The most popular rivers among kayakers are Brda, Wda, Słupia, Łupawa, Wierzyca, Radunia, Łeba, and Bukowina rivers along with their inlets. Kayaking is also possible on the rivers of Żuławy and around Gdańsk (Dobiegała, 2017).

The right conditions for an expansion of sailing tourist activities are also present on the 303 km of the Żuławy Loop, connecting the water routes of Motława, Vistula, Martwa Wisła, Wisła Śmiała, Szarpawa, Wisła Królewiecka, Nogat, and the Vistula Lagoon. This trail is a part of the previously mentioned International Waterway E 70. On the Żuławy Loop, there is a harbour and marinas (Figure 4) along with mooring piers. These are properly equipped places where over 6,500 yachts moored (for a period longer than one day) in the summer of 2017.



Figure 4. Ports and marinas on the Żuławy Loop

Source: Przystanie żeglarskie (Marinas) <http://petla-zulawska.pl/index.php?id=mapa&kat=2&lang=pol#odnosnik> (8.11.2017)

The authorities of the Pomeranian Voivodeship see the tourism potential in the inland waterways of the voivodeship. In the years 2007-2013, two projects came to life in the Pomeranian Voivodeship, the “Program for reviving waterways in Gdańsk” and “Żuławy Loop – development of water tourism, Stage I,” with a goal of creating proper infrastructure for sailing. Under the financial outlook of 2014-2020, further investments in water tourism infrastructure are being implemented, including: “Development of water tourism offer in the area of the Żuławy Loop and the Gdańsk Bay” and “Pomeranian kayak routes – management of water routes in the Pomeranian Voivodeship for the development of kayak tourism.” A significant project for water tourism may also be the “Pomeranian cycling routes of international importance.” The investments planned in the Pomeranian Voivodeship take little account of the Vistula River, where passenger transport services were carried out until 1974. Attempts to reactivate these cruises in later years ended with ship owner’s resignation due to numerous shoals on the river.

Conclusion

One of the most indispensable sectors of the Pomeranian economy is maritime trade and tourism. The growing turnover in these sectors indicates the proper use of the region’s natural potential. However, the surface water resources, especially the Vistula River, are used to a very limited extent when it comes to transport, which due to the growth of the passenger and freight traffic leads to congestion and causes further adverse consequences. Considering the planned expenditures in seaports, with the purpose of servicing larger vessels and more cargo, investments in improving the quality of transport infrastructure will also be necessary. In regions with existing spatial development and lack of areas for the development

of roads and railways, the reactivation of transport on the Vistula River may present a chance for growth. The development of the Vistula River for transport purposes would improve tourism and the transport accessibility of the region and would ensure access to Vistula-bank towns from the river.

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