

The influence of economic and geographic conditions on the development of container terminals at the Szczecin and Świnoujście Seaports Authority

Katarzyna Posacka

Maritime University of Szczecin
1–2 Wąły Chrobrego St., 70-500 Szczecin, Poland, e-mail: kasiawsm@op.pl

Key words: channel, container handling, capacity, fairway, rail, basin, TEU

Abstract

This publication describes the factors governing the development of containerization in Szczecin and Świnoujście Seaports Authority, together with their organizational infrastructure and economy. These factors include port access to transportation facilities, which has a major influence on economic development and strengthens the position in the Polish market. Geographic location of both the port and the status and functioning of the Szczecin-Świnoujście fairway were taken into account. The amount of container handling in the ports described in the years from 2004 to 2015 was examined. The Szczecin and Świnoujście Seaports Authority is discussed in terms of size and progress of its changes, and handling capacity compared to other marine container terminals in Poland.

Introduction

Currently, container transports are the most economic and efficient means of moving goods over large and small distances. Unification of the system breaks down the barriers associated with the movement of containers to different regions of the world. At the same time, cargo handling has been improved, creating new combined means of transport like intermodal and multimodal methods.

All of these new solutions and technologies influencing the development of container transport, aiming primarily to increase capacity and handling, which mainly involves the construction of ships with increasing capacity, as well as the modern container terminals that are able to handle them.

In order not to fall out of the market, and to be competitive in the area of economy, old terminals undergo metamorphosis. First of all, expansion by increasing its facilities, adapting infrastructure in such a way as to handle as much cargo in the shortest possible time and at the lowest possible cost.

Geographical location of the Szczecin and Świnoujście Seaports Authority

The geographical location of the Szczecin and Świnoujście, shown on the map in Figure 1, is an important factor in the development of the maritime economy of the region. Their location creates the shortest sea route leading north, which connects the ports with the Scandinavian countries and the route leading to the east connects the ports of Russia, Lithuania, Latvia and Estonia. The route leading to the western ports connects with all Western Europe. The port of Świnoujście, latitude: 53° 25' N, and longitude: 14° 32' E, is located on the Wolin and Uznam islands, the Karsibór estuary of the Świna. The entrance to the port secures two breakwaters from the East (length 1400 m) and west (approximately 300 m). The port can be entered by ships with a maximum length of 260.0 m, a width of 42.0 m and a draft of 12.8 m. The advantages of this port are primarily its being the largest Polish terminal for dry bulk cargoes, a modern ferry terminal, and a Duty

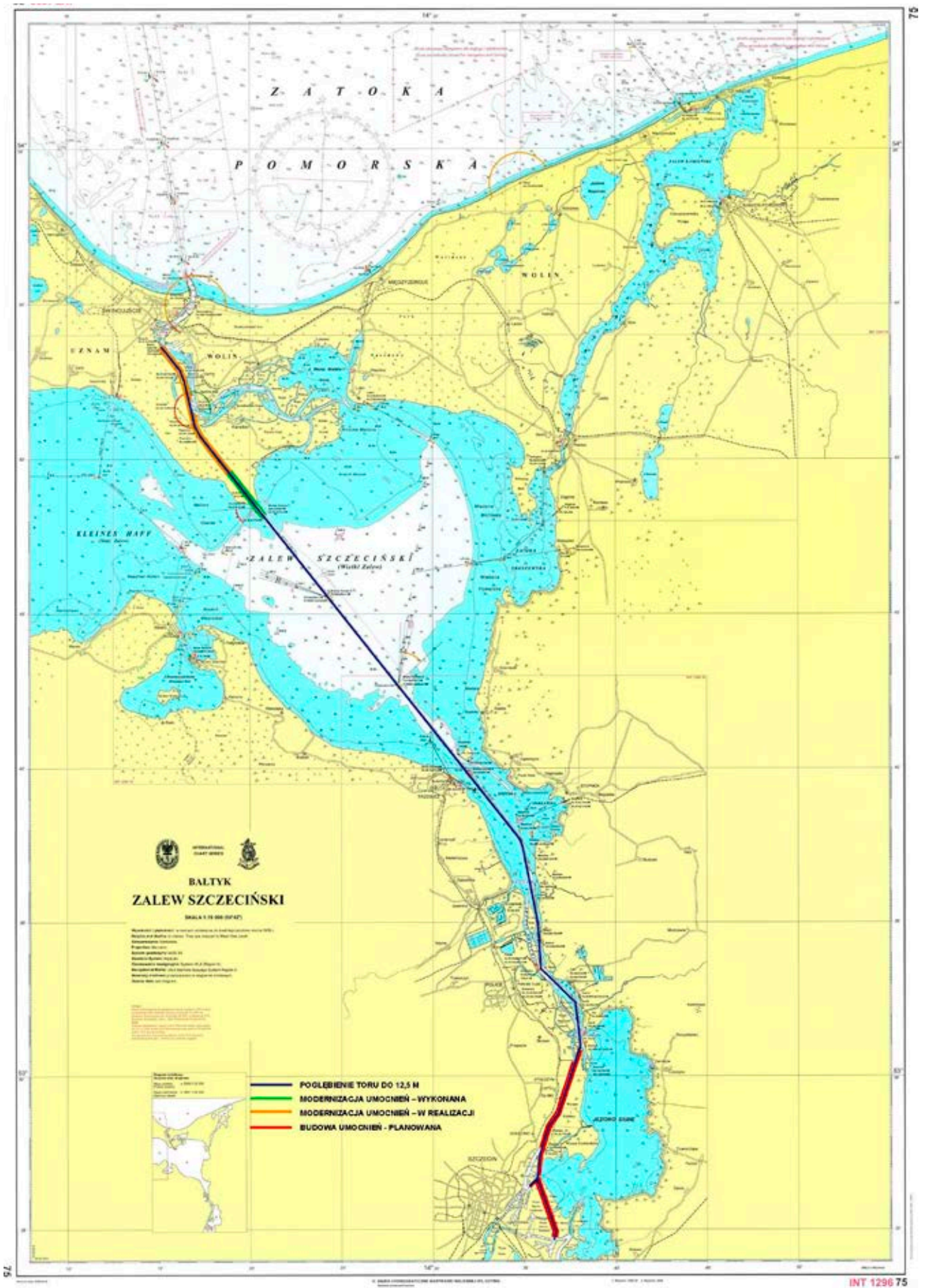


Figure 1. Chart No. 1296 Hydrographic Office of the Polish Navy: Baltic Sea, Lagoon of Szczecin (UMS, 2014)

Free Zone. Passage waterway from the roadstead in Świnoujście to Szczecin takes 4 hours and the distance is 67 km.

The Port of Szczecin is located in the hinterland of geographic coordinates: latitude 53° 55' N, longitude 14° 15' E. Canal Skolwiński runs north, then the port area runs along the banks of the Oder River, up to Castle Route (Western Odra). From the southern border of the port outlines channel Parnica with basins located at the southern end of Przekop Mieleński.

The eastern boundary extends from the Quay Regalica on the Odra River East, which includes the eastern shore of Przekop Mieleński and the Odra River to the north end of the island Dębiny. In the port of Szczecin are the following basins: Przekop Mieleński, Nowy Przekop, channel Grabowski, channel Dębicki, Duńczyca, channel Wrocław (Industrial), Parnica and Lake Dąbie (UK, Hydrographic Office, 2011; ZMPSiŚ, 2016b; UK, Hydrographic Office, 2014/15).

Important elements that affect the economic competition of the ports of Szczecin and Świnoujście

It is necessary for the improvement of the economy and maintenance of ports in a competitive market to deepen the fairway. For the port of Szczecin, the handling of large vessels is currently impossible. The port of Szczecin is located inland and has a maximum depth of 9.15 m, making it dependent on the Świnoujście. Plans and the commencement of work are associated with huge financial commitment. The project includes not only the work necessary to obtain the desired depth of technical track (12.5 m), which is output from the bottom, transport and storage of excavated material, but also widening the track, the streamlining of navigation devices and their continued maintenance.

A further important element influencing the competitiveness and the importance of ports internationally, is road infrastructure. Containerization as multimodal transport should have transport hubs connected by different means of communication. Ports should adapt their facilities in such a way as to ensure complete transport services of a logistics. The advantage of Szczecin's position inland is the proximity to customers and consignors, resulting in cheaper cost of land transport. Consequently, for the base port of Szczecin, good road connections are very important, providing a possibility of combined transport at a European level through the European

transport network, TEN-T. The main idea is an integrated transport system, which includes a well-developed road infrastructure, waterways and rail that in turn will affect faster and cheaper delivery. Further, the idea is a multimodal integrated transport system, which includes a well-developed road infrastructure, waterways and rail, resulting in faster and cheaper delivery. Another advantage is the integration of European countries and the increasing importance of the transport market of the European Union. Figure 2 shows the Central European Transport Corridor CETC-ROUTE65 (Siergiej, 2009).

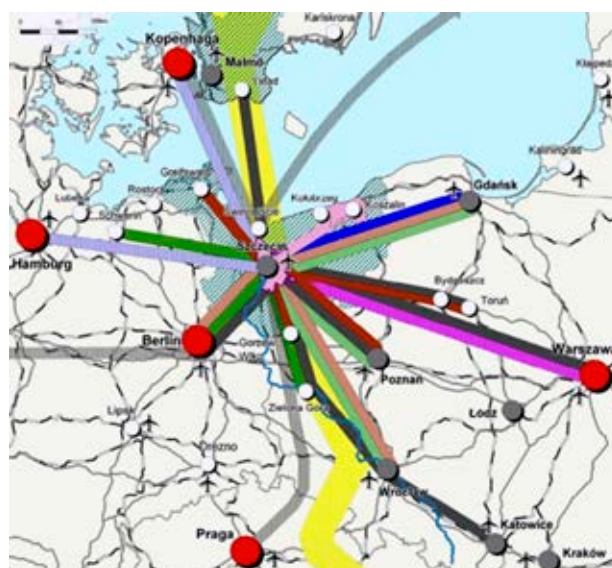


Figure 2. Spatial development plan West Pomeranian Province showing key routes of the West Pomeranian Province at the European and national level (RBGP, 2012)

The General Directorate for National Roads and Motorways (GDDKiA) is responsible for roads and their condition. The GDDKiA performs the following project construction and supervision of public roads and highways:

- S3 expressway Szczecin – Świnoujście, allowing access to the ferry base from which daily ferries depart to Malmö, Ystad and Copenhagen, with a fragment of the E65 international road intersecting with the A6 motorway in Szczecin;
- International road E65 to the Czech Republic via Gorzów Wielkopolski, Zielona Góra, Legnica and Jelenia Góra;
- International road E28 to the Tri-City, Koszalin and Słupsk;
- Connection to the A11 motorway in Western Europe with the Berlin border crossing point in Kołbaskowo;
- National road No. 31: Szczecin – Kostrzyn – Słubice / Świecko;

- National road No. 10: Lubieszyn – Szczecin – Bydgoszcz – Toruń – Płock.

The safest, cheapest, but not the fastest land transport container is rail. Railway line C-E59 is part of the corridor of the international connection running from Malmö, Ystad by Świnoujście – Szczecin – Kostrzyn – Zielona Góra – Wrocław, the fork of Chałupki (line E-59) and Międzyzlesie (line C-59/2). Both railways have a connection with international railway lines.

Great significance for increasing economic competitiveness in the ports of Szczecin and Świnoujście is an investment in waterway transport. Across the Odra River, Odra-Hawela channel and national trails, inland ports have direct access to the European network of waterways. Basins and port quays are fully adapted to shipping and handling barges, which are the cheapest mode of transport inland. Unfortunately, in Poland at the present moment, there is no improvement in the conditions for the development of inland navigation. Lack of attention and ineffective measures have led to inhibition of development in this area of economy. The technical conditions of waterways are degraded, together with the disappearance of the fleet ship owners. Inland transport practically no longer exists, and the waterways are traversed mainly by tourists. The primary reason is the lack of financial support from the EU, and the delayed implementation of maintenance work (Toczyński, 2001; Salomonowicz, 2011; Lang Lasalle, 2013; Poland, ZMPSiŚ, 2014).

Assessment of the status and functioning of the Szczecin-Świnoujście fairway

The Maritime Office in Szczecin has developed a project called “Modernization of the fairway Szczecin-Świnoujście”, which is intended to improve the investment offer of the whole region. The project is co-financed by the European Union from the Cohesion Fund under the Program Infrastructure and Environment. The challenge is to deepen the fairway along the entire length to the technical depth of 12.5 m, and to modernize the technical infrastructure of the preservation and protection of the environment. The program is divided into three steps of operation; the first is shown in Figure 3, which began in year 2000 (UMS, 2016).

Due to lack of adequate financial resources and neglect of maintenance, the critical situation on the fairway Szczecin-Świnoujście led some places to shallow below 10 m. The project is aimed primarily at ensuring the safety of shipping ports. Repair of



Figure 3. The stages of modernization (reconstruction) of Świnoujście-Szczecin channel (channels Piastowski and Mieleński) (UMS, 2009)

damaged fortifications and the removal or elimination of hazards during floods; it is only one of many problems with the fairway. Presently, the port of Szczecin call in container ships carrying containers of up to 1600 TEU. More and more frequently, the port of Szczecin is missed out, which exposes “Team Ports” to big losses, and this consequently affects the economic development of the whole region.

In 2013, the second stage of modernizing the fairway was begun. At this stage, the work will focus on the remaining fortifications edge, cutting Piastowski channel to 9.000 km and channel Mieleński to 5.043 km Świnoujście-Szczecin. After the so-called bottom of the channel for cleaning objects, which are not dredged material e.g. the entire project is planned for two years, taking into account the migration of fish in the spring and winter freezing (Poland, Baltic Sea, 2010).

Analysis of container handling in the Szczecin Świnoujście Ports Authority

Since 2004, the Ports Authority has a two-container terminal. In 2012, the company OT Logistics SA, bought part of DB Schenker Rail Poland SA, taking a controlling share in the Commercial Port in Świnoujście. The company specializes in bulk cargo, where in 2013 the Świnoujście port handled their record quantity. The bulk goods therefore completely displaced the transshipments container; the terminal in Świnoujście is not currently carrying out the container cargo operation, annexing the planned area of the terminal handling of containers (Radio Szczecin, 2014).

The Port of Szczecin, managed by DB Port Szczecin, supports feeders, loaded in the largest

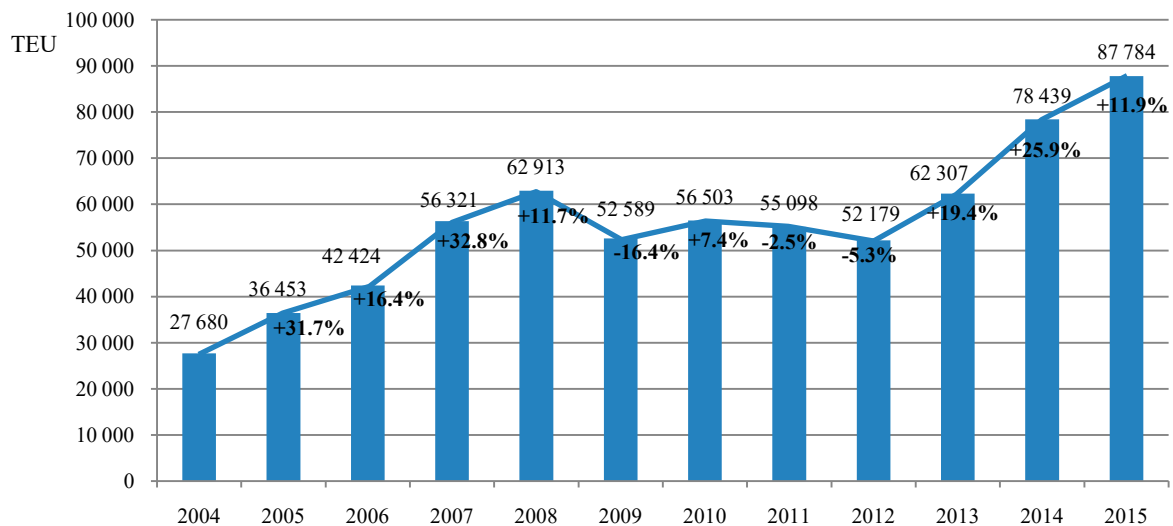


Figure 4. The size of container handling in the years 2004–2015 in Szczecin and Świnoujście Ports Authority [TEU] (ZMPSiŚ, 2016a)

maritime hubs in Europe, i.e., Germany, Belgium, United Kingdom. It also has permanent line services to the UK, Finland, Estonia and Lithuania (DB Port Szczecin, 2016). Figure 4 shows the size of the container handling unit TEU in the years 2004 to 2015, and their annual percentage increase.

From the above graph, it can be observed that in the first years of the period, an increase was recorded. Transshipments in 2004 amounted to 27,680 TEU and gradually increased, reaching these values, along with their annual increment percentages: 2005 – 36,453 TEU (+31.7%), 2006 – 42 424 TEU (16.4%), 2007 – 56 321 TEU (+32.8%), up to 2008, in which the loading and unloading of 62,913 TEU (+11.7%) was more than twice as high as in 2004. The year 2009 is the beginning of DB Port Szczecin's activity, in which there was a significant decrease of 16.4%, giving a result of 52,589 TEU and was caused by the global economic crisis; the collapse of the banking market of the United States, which took place at the turn of the year 2008/2009. Analyzing years of activity has brought positive results. In 2010, rotation increased by 7.4% to 56,503 TEU. The next year noted another, but not as drastic, decrease of 2.5%, giving 55,098 TEU. The downward trend continued in 2012, reducing the transshipment by 5.3%

and closing it to the result of 52,179 TEU. Finally, 2013 brought an increase of 19.4%, giving the result of 62,307 TEU. Container handling in 2014 was 78,439 TEU as a result of a 25.9% increase from the previous year. The last year examined is 2015, which recorded an increase of 12%, giving 87,784 TEU. This significant increase in container handling at the port of Szczecin is the result of strong growth in rotation at the terminal, and the loss of cargo handling in the port of Świnoujście.

The structure of container handling in the Ports Authority against the background marine container terminals in Poland in 2010–2014

Poland currently operates six marine terminals. The largest and most successful two are located in the port of Gdańsk. They are DCT – Deepwater Container Terminal and GCT – Gdańsk Container Terminal. Analyzing the data presented, it can be seen that the container handling in Polish ports is increasing rapidly. From year to year, handling capacity is gradually increasing. Table 1 shows a comparison of container handling at all sea ports in Poland in the years 2010–2015.

Table 1. Container handling in the largest Polish seaports 2010–2015 [TEU] (Port Gdańsk, 2016; Port Gdynia, 2016; ZMPSiŚ, 2016a)

The Years	2010	2011	2012	2013	2014	2015
Gdańsk	511 876	685 643	928 905	1 177 623	1 212 054	1 091 202
Gdynia	485 255	616 441	676 349	729 607	849 123	684 796
ZMPSiŚ	56 503	55 098	52 179	62 307	78 439	87 784
Poland	1 053 634	740 082	1 657 433	1 969 537	2 139 616	1 863 782

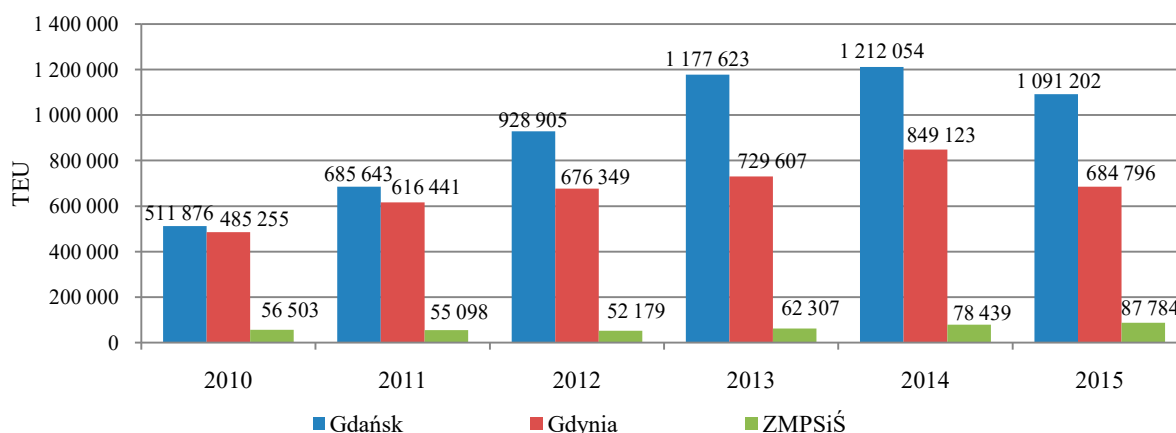


Figure 5. Container handling in the biggest Polish seaports in 2010–2015 [TEU]

Figure 5 was obtained on the basis of the data shown in Table 1, shows the container handling in the biggest Polish seaports.

Figure 6 is characterized by container handling in 2010–2015 with regard to the increase in percentage on the basis of Table 2. It shows that in 2011, the Szczecin and Świnoujście Seaports Authority had the only decrease in transshipment compared to the previous year by 2.5%, and maintained the negative tendency in 2012 with a result of 5.3%. A trend of decline was noted until the end of 2012 and 2013 brought an increase reaching 19.4%, which increased even more in 2014 to almost 26%. Most transshipments were recorded in the port of Gdańsk, then in the port of Gdynia, with the Szczecin and Świnoujście Ports Authority coming last. At the

beginning of the analyzed period of 2010, the ports of Gdynia and Gdańsk only slightly differed in the amount transshipments. This difference begins to increase significantly from 2011 to the advantage of the port of Gdańsk, with a 33.9% increase, and in 2012, improving slightly to 35.5%. In May 2011, a new era was initiated for the DCT in the port of Gdańsk, by establishing cooperation with the world’s largest ship owner, Maersk Line. At the same time, DCT terminal has become the only container terminal in Poland that supports 10 lines AE, connecting Asia with Europe.

Currently, cargo rotation analysis shows that the containerization achieved another major record. Polish seaports serviced more than 2 million TEU by 2014 already. The best result for the

Table 2. Percentage increase in container handling in the biggest Polish seaports 2010–2015 [TEU]

The Years	2011–2010 [%]	2012–2011 [%]	2013–2012 [%]	2014–2013 [%]	2015–2014 [%]
Gdańsk	33.9	35.5	26.7	2.9	–10
Gdynia	27	9.7	7.9	16.4	–19.4
ZMPSiŚ	–2.5	–5.3	19.4	25.9	11.9
Poland	28.8	22.1	18.8	8.6	–12.9

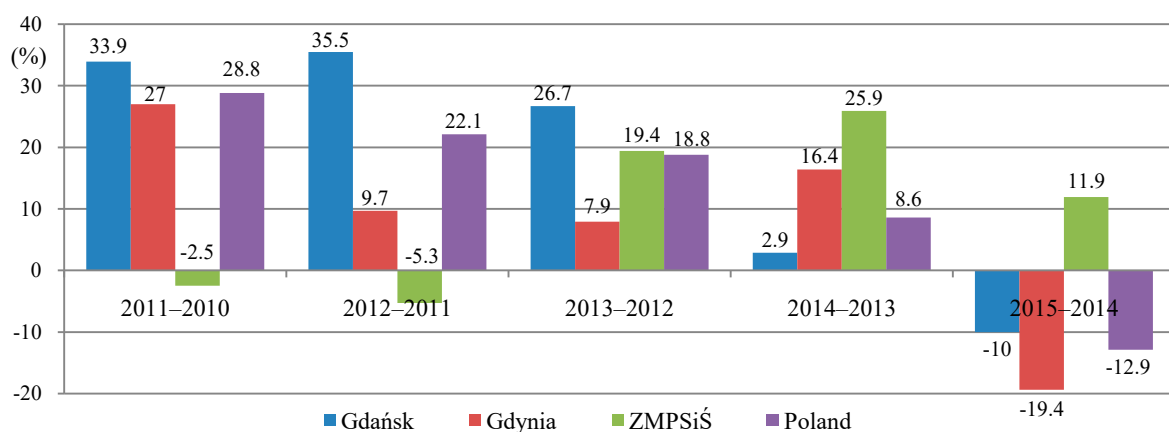


Figure 6. Percentage increase in container handling in Poland in years 2010–2015

period 2014–2013 reached a port in the Szczecin and Świnoujście Ports Authority, where the increase was almost 26%. After the Szczecin and Świnoujście Ports Authority, with the result of 16.4%, came the port of Gdynia, while an increase of 2.9% was obtained in the port of Gdańsk. It should be noted that the 2.9% in Gdańsk gives a greater value of the TEU (34,331) than the 25.9% obtained by the Szczecin and Świnoujście Ports Authority (16,132 TEU) between 2014 and 2013. However, it should be noted 2015 was not as good as 2014 for all Polish ports; only Szczecin and Świnoujście Sea Port Authority recorded an upward trend in the last examined year of 2015 with the result of almost 12%.

Conclusions

Investments made in Polish seaports are evidence of the increasing demand for container transport by sea. EU support for the modernization and improvement of the road infrastructure of different modes of transport is mainly an economic dimension. Poland is not growing in this direction and becomes the proverbial “bottleneck”, so favored by EU policy, aims to create an integrated multimodal transport system. The construction of the Trans-European Transport Network seeks to integrate in such a way as to ensure good road, rail, and inland with port facilities of Szczecin and Świnoujście. These changes also have increased the importance of Polish ports to handle transit traffic.

The Szczecin and Świnoujście Ports Authority would have developed faster, but the development has been slowed by constant deterioration of the deepened fairway where modernization is associated with high financial investment.

The described terminals in Szczecin and Świnoujście continuously change in terms of improving handling operations. The Szczecin and Świnoujście Ports Authority when compared to the ports of Gdańsk and Gdynia is far behind in terms of cargo handling. This can be explained mainly by the increased possibilities provided by deep water in a channel (Szczecin will not to be a deep-water port like Gdańsk). The situation of not handling containers in Świnoujście has been temporality stopped. The terminals still exist and there are the plans to reactivate them, but no particular date has been issued. The data analyzed in this study covered the period of container handling in the Szczecin and Świnoujście Ports Authority presented during its best and worst years. This included the crisis in the global market (2009), in which there was a decrease of as much as

16.4%. The most productive period in the analyzed period was 2014 with almost 26% increase. In total, Poland reported a nearly 13% decrease in the last analyzed year (2015). The Świnoujście terminal, compared to Szczecin, is not particularly strong. There were attempts to increase its handling capacity for example the purchase of a crane in 2013. However, the company specializes in bulk cargo, which achieve excellent results, and therefore deeper analyses of the container terminal in Świnoujście would not yield particularly valuable findings.

For comparison, further analysis showed that handling in the ports of Gdańsk and Gdynia (2010–2015) increased up to 2014. During the last analyzed year a decrease was observed, which affected the result of container handling in all Polish ports. Operation of the world’s largest owner means that the port in Gdańsk is constantly expanding its facilities and handling capacity. As a result of the maritime customers at Gdańsk the port was highly evaluated in 2014 and reached a record result of 1,212,054 TEUs.

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