

The Baltic – Adriatic Transport Corridors – Natural Environment of Logistics Infrastructure Development on the Polish Baltic Sea Coast

Szymon Wiśniewski
University of Lodz, Poland

This article presents the operating principles of the Baltic–Adriatic Transport Corridors – a supranational structure functioning on the background of European countries and on the Polish Baltic Sea coast in particular. It deals with both the issue of transport policy within the framework of this corridor and implemented logistics solutions accompanying changes in goods flow, since the importance of transport corridor is determined not only by infrastructure with adequately high technical parameters, but also by the type of flows which are accomplished via this corridor. And these, in the case of the Baltic–Adriatic transport corridor, are going to increase dynamically in the foreseeable future.

Keywords: the Baltic–Adriatic transport corridor, green logistics corridors, Valley of Logistics.

1. INTRODUCTION

As indicated by the example from the history of both the world and Europe, traffic routes have always decided about stagnation or prosperity of many civilizations as settlements and trade sprang up along these routes. It was also natural that movements of goods and people functioned this way [1]. Availability of key trails also frequently resulted in dynamic trade development. In the first phase of its development transport was connected with rivers to move later to railway routes and roads which enable travel at great speeds. In the case of Poland the trail from north to south has been a strategic transport artery since historic times going along the inland waterways of the Vistula river. Goods from the south of Poland have been floated down the Vistula river in the direction of the Baltic Sea since middle ages. A reference to such transport relations in modern times was the interwar period [2]. Due to the completion of the Polish Coal Trunk-Line it was possible to integrate two areas which are the key ones due to Poland's international transport connections: Pomerania with a newly built port in Gdynia with Silesia and its numerous mines.

As a member state Poland currently shares competences relating to transport policy and policy

for trans-European networks with the European Union [3]. Following the transport policy and policy for trans-European networks is the result of the necessity to ensure free movement of goods, people, services and capital within the European Union market devoid of any internal borders (Article 3, point 2 of the Treaty on the European Union, Article 26, points 1-2 of the Treaty on the Functioning of the European Union). It also arises from the objective to achieve economic, social and territorial coherence and harmonious development of the whole territory of the European Union (Article 3, point 3 of the Treaty on the European Union, Article 174 of the Treaty on the Functioning of the European Union). The whole EU transport network is divided into core network and comprehensive network. The first one will have been finished by 2030 whereas the latter twenty years later. Both levels will include all transport types: by road, rail, air, sea and inland navigation as well as nodal points - intermodal platforms.

The Baltic–Adriatic transport corridors an idea the fundamental aim of which is to enhance strategic relations of countries and regions on the north-south axis. Intensification of indicated connections is accomplished by improving of their mutual transport availability, intensification of the

movement of goods, people and information as well as promotion of new transport directions (the Mazovian Office for *Regional Planning* in Warsaw, Polish: Mazowieckie Biuro Planowania Regionalnego).

The importance of the north–south axis where there has been systematic and considerable trade exchange for the last few centuries remains devoid of adequate attention [4]. Poland's integration into European Union's structures was accompanied by the opportunity to increase greatly the importance of the existing connections. The year 2009 was decisive for the idea of the Baltic-Adriatic transport corridor when intentions concerning interregional co-operation for accomplishment of the VI Pan-European Transport Corridor gained their momentum. In October 2009, 14 regions being representatives of Poland, the Czech Republic, Slovakia, Austria and Italy signed an agreement concerning "immediate realization of the North-South rail corridor" (Gdańsk/Gdynia – Warsaw – Brno/Bratislava – Wien – Bologna). Moreover, in December, nine among the aforementioned regions representing Poland, the Czech Republic and Austria signed a declaration about the European and regional importance of the axis of the motorway Gdańsk – Brno – Wien (figure 1.). The continental part of the Baltic-Adriatic transport corridor occupies the territory from the ports in Gdynia and Gdańsk to ports of northern Adriatic, Italy and Slovenia. Besides that the corridor's branches reach the basins of the Aegean Sea and the Black Sea. The real physical quantity of the corridor is 1,700 km (the physical quantity between the ports is about 1,200 km). The corridor transport networks run through five EU member states ensuring transport availability for 55 million inhabitants. The Baltic-Adriatic transport corridor has also its Scandinavian part running from Oslo to as far as Karlskrona (with the real physical quantity of about 600 km). The corridor's integrity is ensured by the Swedish sea part having the status of "Gdynia-Karlskrona motorway".

The international Baltic-Adriatic transport corridor on the territory of Poland was originally formed by A1 motorway, E65 railway (line no. 4, 9) and the Polish Coal Trunk-Line (line no. 131). In turn, in October 2013 the route of the Baltic-Adriatic transport corridor was corrected by the so-called Szczecin Corridor. The European Commission extended the initial network of BAC (Baltic Adriatic Corridor) by the axis Szczecin/Świnoujście - Poznań - Wrocław -

Ostrawa. This decision was caused by the necessity to extend rail and road infrastructure, which should result in potential and real inclusion of ports in Szczecin and Świnoujście into the trans-European transport system. The significance of the corridor for the functioning of Polish and European transport systems is reflected in the decision of EU institutions to put it on the list of 30 Trans-European Transport Networks TEN-T (TEN-T) priority projects.



Fig. 1. The route of the Baltic-Adriatic transport corridor.

Source: own work on the basis of TENtec Information System [5].

For the full understanding of the idea and importance of the Baltic Adriatic transport corridors a supranational structure functioning against the background of European countries it is necessary to refer to its impact on the economic growth of areas manifesting itself, for instance, by appearance of logistics infrastructure.

Out of consideration for the history of transport relations on this route, the functioning of the Baltic-Adriatic transport corridors it is today seems to be absolutely natural and constitutes confirmation in the official European Union

structure which has functioned practically in an unchanged form since the beginning of settlement on this area. It is necessary, however, to reconsider the corridor management so as to use its potential in the most effective way possible.

The Baltic-Adriatic transport corridor, marked VI in the trans-European network system, after completion of key investments in the form of A-1 motorway and modernization of E-65 and CE-65 railways, will be able to send cargo to inland Poland and as transit in the direction of Mediterranean or Black Sea countries. Nonetheless it is necessary to launch new intermodal equipped with nodal points in the form of logistics centres so that these rail connections could be characterized by the desired levels of time and cost effectiveness. They focus generally on the increase in the effectiveness, territorial integrity and compatibility of individual transport systems with emphasis on railways and modern systems of transport infrastructure management. Thanks to them individual transport systems will be integrated. Logistics centres, particularly those with multimodal character, are places where such processes may mainly take place.

The present situation of the Baltic-Adriatic transport corridors to a large extent a consequence of the global economic crisis which imposed budget cuts. This resulted in postponing part of investments into infrastructure. The corridor condition also affects the economic situation of the areas through which its networks run. A good example of the close relationship between corridor condition and the economic situation is the market of TSL services (transport - shipping - logistics).

The corridor managers see opportunities for its growth in opening the Baltic Sea Region in the direction of transport trails leading to the Far East ports. Nonetheless this vision is connected with extensive investments as the current situation results in the fact that majority of cargos reloaded in Pomerania ports is not transported by land from the north to the south but goes to other Baltic ports (Helsinki, Petersburg, Kotka) within the so-called trans-shipments [6].

The functioning of transport infrastructure and flows does not, however, allow to use the corridor's potential to the full, which is why the Association of Polish Regions of the Baltic-Adriatic Transport Corridor was established in March 2012. It is aimed at creating and promoting the development zone of the Baltic-Adriatic transport corridor both in Poland and abroad. The Association is also striving to ensure coherence of

strategic and spatial planning within the corridor zone in Poland. It also constantly monitors infrastructure investments both in progress and in the pipeline. It is also worth remembering about initiating activities to increase the importance of intermodal transport in the corridor zone, using the Vistula waterway, rail transport and modern intermodal technologies.

The main goal of this article is to present the principles of functioning of the Baltic-Adriatic Corridor in terms of transnational structure existing against the borders of European countries, with particular emphasis on the Polish coast of the Baltic Sea. After the introduction to the subject of transport corridors, in the first part which was thoroughly devoted to logistics solutions presents operating and planned denouements suited to the European policy of improving the accessibility and interconnection between regions. Then, in the second part of text are indicated logistics solutions operating in the area of research that provide synergistic effects in combination with the previously mentioned transportation systems. The article ends with an attempt to indicate the directions of development of the Polish coast of the Baltic Sea in the transport and logistics.

2. THE REGION'S TRANSPORT POLICY

The North-South transport axis is a comprehensive vision of rational alteration to the European transport system. Initiated four decades ago as a Polish-Hungarian project of the Trans-European North-South Motorway construction it matured to a realistic, innovative and convincing form. Initiatives of the United Nations Economic Commission for Europe: the Trans-European Motorway and Trans-European Railway triggered, despite the existence of the iron curtain, a gradual integration of the area of Central Europe with Western Europe [7]. With time these investments managed to gain considerable support from the Visegrad Group countries. The Agreement concerning development of the Pan-European Transport Corridor no. VI executed in Bratislava at the end of the 20th century established investment priorities concerning road and rail infrastructure in passenger and goods transport – from the Polish Baltic Sea Coast with Gdańsk to the southern border of Slovakia and the Czech Republic. Subsequent amendments to this agreement expanded this corridor area in the northern and southern direction. The definition of transport corridor adopted by the EU identifies it with the

sphere of local and regional development [8]. Consequently, local and regional logistics centres comprising urban nodes become natural components of the corridor. Transport corridors are becoming functional areas where administrative borders or competence barriers do not restrict people's mobility and enterprise development [3].

Formulation of strategic aims of the Baltic-Adriatic transport corridor was initiated by the Veneto region on the south end of the north-south corridor having at its disposal sea ports in Venice and Trieste [9]. This was accompanied by two projects: A-B Landbridge¹ and its continuation - the South-North Axis² (SoNorA) and resulted in a network of three complementary multimodal transport corridors. The strategic aim of both these projects is to reduce transport intensity of trade through optimization of goods and passenger transport routes. In practice this aims at creating competitive transport infrastructure, structures of cross border co-operation and logistics processing area in Central Europe. Their function is to enhance the integrity of this region which a while ago was outside the EU. Its competitiveness is the preliminary condition which makes the region's economies independent from the North Sea ports.

Having in mind that sea transport of goods in the relations Central Europe–Asia covered by North Sea ports tends to make journey times longer and costs higher, cause congestion and excessive CO₂ emission, overburden transport routes and

¹ The international research project entitled "Adriatic - Baltic Landbridge", realized between 2006 and 2008 as part of the INTERREG III B/CADSES program, is the first initiative supporting the EU priority projects in the zone between the southern coastline of the Baltic Sea and the northern coastline of the Adriatic Sea. The basis of the project implementation is creation of a multi-sector partnership between entities from different countries so as to identify diverse scenarios how the transport corridor comes to existence and functions as well as to determine its potential market opportunities. Different versions of corridor routes versions will be identified, characterized and assessed in the project, having in mind regional area development plans, transport conditions and availability of logistics services [10].

² The SoNorA project concerns multimodal transport availability on the south-north axis in Central Europe. Relying on experiences of past projects which focused on the landscape, general technical conditions transport plans on this area, SoNorA gathers 25 partners from 6 Central Europe countries and 34 associated institutions which work hand in hand to support location of basic infrastructure and transport services. [11].

contribute to transport accidents, the South-North Axis project identifies the existing bottlenecks or missing elements, ineffective technologies, administrative structures or procedures. On the basis of this diagnosis a couple of dozens of recommendations were prepared concerning both hard investments and soft or even political activities. These last ones include, for example, an initiative of 14 European regions, including 7 from Poland, for creation of the Baltic-Adriatic Corridor.

Here it is worth mentioning the function of the SoNorA project in implementing the so-called concept of the Logistics *Competence Centre*³ for the development of the vision of the Valley of Logistics for the Gdynia port, which will be discussed later in the article. Other activities included referring to the ESPON recommendation concerning functional areas (MEGA) [13] and establishment of the Association of Polish Regions for the Baltic-Adriatic Corridor.

The Baltic-Adriatic transport corridor is an initiative aimed at strengthening of countries and regions on the north-south axis. The aim is to improve their transport availability, transport intensification and promotion of new routes in the movement of goods and people.

The European Commission is planning to allocate over thirty million euros in the current programming period [9] for transport investments, especially rail infrastructure. Many of these funds will be used for extension and modernization of the Baltic-Adriatic corridor, which is becoming the main development artery for Central and Eastern Europe as well as a link with Scandinavia.

The year 2010 was decisive for the BAC idea in Poland. Seven Polish provinces including Pomerania, Kujawsko–Pomorskie Province, Warmia-Masuria, Mazovia, Wielkopolskie Province, Łódź Province and Śląskie Province decided to create conditions for BAC development in Poland together. They established that BAC may become a key factor in economic growth in Poland and regions located along its route.

³ Logistic Competence Centre – LoCC is a network promoter of economic development of logistics on the regional level. The Centre co-operates with other Institutions for economic development, which allows to create an innovative system of co-operation and co-ordination of activities between organs from public and private sectors. The aim is to extend logistics networks on the regional, national and international level [12].

Province governments set out to update their development strategies, adopting a time horizon to the end of the present programming period. In accordance with them regional operating with lists of strategic investments programmes will be prepared. For the first time these programmes will be prepared on the basis of a common leitmotif concerning construction of development and welfare zone stretching from Pomerania to Silesia.

Analyzing the transport policy created on the north-south axis one cannot forget about the idea of green transport corridors [14]. By definition they will reflect the idea of integrated transport which assumes that short distance sea navigation, rail, inland navigation and road transport complement each other so as to enable a choice of a means of transport which is environmentally friendly [15]. On corridor routes there will be reloading facilities placed in strategic places, such as sea ports, which coincide with the definition of intermodal as a combination of at least two means of transport in one transport chain without changing the goods container [16].

This idea acquires operational dimension precisely in relation to the Baltic-Adriatic transport corridor. The aim of the Baltic-Adriatic Green Logistic Corridor is to join Scandinavia and the Barents Region with raw material resources and modern industry with markets in Central Europe [17]. The Bothnian Corridor extended by transport routes serves this very purpose. The network will have acquired a green corridor standard by 2030. Super Green⁴ distinguished 9 green transport corridors [18]. Poland and Central Europe are a blank spot on the map of these corridors [19]. An answer to such an unfavourable situation is the Bothnian Green Logistics Corridor (BGLC) [20], supporting the accomplishment of the so-called European Rail Network. It includes the European Goods Corridor linking the Polish Baltic Sea coast with ports of northern Adriatic Sea. Opening of the corridor is scheduled for the end of 2015.

The European Union project BGLC is a Scandinavian-Polish-German idea how to cut back on transport costs and improve the natural environment. An increase in green transport by railways and waterways to 2030 r. is a challenge for whole Europe. Green logistics corridors are a future of European transport systems. The green

corridor joining Scandinavia, Poland and Central Europe will be beneficial for innovative economy, such as transport and logistics operators, research facilities, the natural environment, cities – European growth poles.

The importance of BGLC is not to be overestimated in the development of Baltic-Adriatic corridor. Following the EU Strategy for UE the Baltic Sea Region based on recommendations of the Trans Baltic project, transport corridors in the Baltic Sea Region should meet high green corridor [21]. The aim of the agreement is maintenance and development of dialogue concerning resource-efficient sustainable development of the transport system comprising the Baltic-Adriatic Corridor. The Trans Baltic project justifies development of all strategic transport corridors in the Baltic Sea Region as green corridors, including the corridor using the Gdynia-Karlskrona connection.

Another project, called SEBTrans finished a while ago, and dealt with development and investment plan in the sphere of the Pan-European Transport Corridor no. VI (Gdańsk/Gdynia - Vienna/Bratislava) [22]. The ferry connection between Gdynia and Karlskrona is the main sea extension of this corridor. It is of great importance as Gdynia/Gdańsk attracts the bigger part of the country including most major industrial centres as well as the majority of Poland's inhabitants. Additionally, it complements the potential of Poland's neighbours (Central Europe countries) and Sweden (Norway).

It is worth stressing that Polish-Scandinavian projects, which are coherent with the BGLC goals, have a rather long tradition. In 1930s Poland and Sweden established the corridor linking Gothenburg, Karlskrona, Gdynia, Constanza and Near East ports. A vision of Oslo-Athens Trans-European motorway has been also developed on the local level since 1970s. Poland's accession to the EU enabled Polish ports to participate in EU transport projects.

The share of Polish port infrastructure in the project facilitates development of connections of the Bothnian Corridor with the Baltic Adriatic corridor. The most important components of this corridor are the E65/CE65 railway and roads E75 and E77. Including the E40 waterway to the Baltic-Adriatic transport corridor will create an optimal transport route north - south-water motorway on the Vistula river and its connections towards the Black Sea. The BGLC will satisfy all the transport needs, including those in relations to

⁴ The aim of the Super Green project is to support development of European goods transport logistics in a way which is environmentally friendly.

intermodal transport using the Roll On/Roll Off connections for exports and imports.

The validity of this transport policy is confirmed by the fact that Nordic countries, including the Barents Region, are abundant in natural resources. These resources are attractive for the EU area [23] due to short and safe delivery routes and high credibility and stability of Scandinavian partners. They may appreciably increase Europe's self-sufficiency in relation to raw materials, which is one of EU priorities.

Europe is the biggest importer of raw materials and their transport often from remote places is costly and increases industrial goods prices, lowering at the same time their competitiveness. The longer the delivery route, the bigger consumption of more and more costly fuels and impact of transport on the natural environment—mainly through fumes emission. Considering the above-mentioned barriers, it is natural to develop the Bothnian Corridor which ensures access to raw materials. It is a strategically important connection within goods transport system in northern Scandinavia. It includes the Gulf of Bothnia with numerous sea ports in Sweden and Finland. It may be extended in all geographical directions, although the direction of south has the biggest development potential—including a continuation with the Baltic Adriatic corridor.

3. REGIONAL LOGISTICS SOLUTIONS

The aforementioned South-North Axis project and its recommendations, including the idea of the Baltic Adriatic corridor, will bring about an increase in the importance of ports of the Baltic Sea and the Mediterranean Sea, creating a rational layout of global and regional transport routes and enhancing European integration. This is of particular importance due to the fact that intermodal transport still represents only a tiny percentage in the total number of journeys [24]. There are only eight intermodal transport operators in Poland: PKP Cargo, PKP LHS, Lotos Kolej, DB Schenker Rail Polska, CTL Express, CTL Logistics, STK AND TL Polska. In turn intermodal terminals are developed by only two operators: PCC Intermodal and Cargosped - Grupa PKP CARGO S.A.

In Poland ports belonging to the TEN-T network are managed by the State in accordance

with the landlord model⁵: management of the land and port infrastructure. The authorities build the infrastructure and modernize it only to rent it later to private entities which provide distribution and logistics services. The port authorities and management bodies of transport infrastructure do not form coherent administration of the transport system. It is necessary to coordinate development of infrastructure connecting ports with closer and farther economic environment with investment activities of port authorities [25] as they constitute a complex geographical relation of different markets. Traditionally, the zone of intensive logistics processes developed at the port hinterland, which was a consequence of limited possibilities of physical load transportation to and from different parts of the world. Due to more and more efficient land transport infrastructure the physical distance is no longer the only factor of logistics infrastructure localization. Now the potential of the port hinterland may be defined as an area which may be reached with lower costs or at a shorter time than from another port [26].

Polish ports (Gdynia/Gdańsk and Świnoujście/Szczecin) serve as a gateway in the case of logistics chains for Central Europe. As ports in the TEN-T network they link Europe with the world, thus enhancing Europe's competitiveness. The gateway functions determine the development of transport infrastructure and logistics services since they promote creation of intelligent specializations of cities and port regions. This trend is supported by adequate solutions concerning competences of local and regional administration, adopting the assumptions of the Leipzig Charter on sustainable development of European cities [27].

The Baltic-Adriatic corridor is potentially the shortest and cheapest north-south route through Poland as well as the most favourable for both the economy and the environment (Gdynia/Gdańsk and Świnoujście/Szczecin). To make this possible the Local Government Initiative for the Baltic Adriatic Corridor (Polish: Porozumienie Samorządowe dla Korytarza Bałtyk-Adriatyk) was

⁵ The renting port is characterized by mixed public and private orientation. In this model, it acts as port authorities of the regulatory body and as a host, while port operations (in particular in relations to goods reloading) are conducted by private entities. Examples of renting ports include Rotterdam, Antwerp, New York and since 1997 also Singapore. Today renting ports constitute a dominating model of ports for big and medium-sized ports.

set up and entered into by six local government associations in Poland. General transport policies aimed at intermodal transport competitiveness tend to be ineffective since they usually do not take into consideration private interests of the parties functioning in the supply chain. Successful promotion of intermodal transport is the most critical operation in order to achieve sustainable transport, which is one of the most important aims of the EU transport policy. For this reason the European Commission, as part of research projects and financial instruments, supports policies, projects and development of advanced tools to promote intermodal transport [28].

To achieve synergy effects where transport infrastructure of adequate parameters and logistics infrastructure meet, it is essential to have a coherent development scenario of the Valley of Logistics on the territory of Gdynia and the neighbouring communes: Rumia, Reda, Wejherowo and rural communes of Kosakowo and Wejherowo [29]. This area is a future logistics platform of port, rail and road and air terminals as well as a development zone of port-related industry and logistics. The Valley of Logistics addresses the problem of how to increase the capacity of the transport node in Gdynia and Tri-city, a solution which is innovative, multi-sector and compatible with the sensitive urban and natural environment. This refers to postulates concerning development of functional urban areas included in the South-North Axis Project. Functional urban areas with developed city logistics are supposed to ensure optimal conditions in which multimodal transport operators will be able to conduct their operations [30] on areas especially prepared to this end (clusters). Within the project called NORDA – the North Pole of Development, the Valley of Logistics created on the basis of Baltic co-operation, it is possible to obtain EU financial support in 2014-2020. As a result, in the foreseeable future this area stand a chance of becoming a key hub of goods exchange and centre of transfer of innovative transport technologies in the Scandinavia-Central Europe relation. The Valley of Logistics is developing within 10 km radius from goods and passenger terminals in the Gdynia port. As for development of transport systems, this area is the responsibility of road authorities (national, provincial and local) as well as rail, port and airport authorities. Warehouse resources, including fuel warehouses, develop in this zone using different transport and delivery technologies. Routs of three priority TEN-T

projects cross there: the Baltic-Adriatic motorway, the Baltic Adriatic railway and the Sea Motorway of Gdynia-Karlskrona⁶. The prospect of establishing a Multimodal Platform in Gdynia with Northern Ring Road of Gdańsk-Sopot-Gdynia Tri-city Agglomeration and an inland rail port in Gdynia, the South-North Axis Project established the aforementioned sub-regional functional zone.

The strategic importance of the Valley of Logistics is a consequence of the fact that international trade is based on sea transport. Ships transport approximately 80% of container cargo. With a steady tendency to replace container ships with ships of ten thousand tons displacement, the number of ports which are able to cater for them decreases and today there are barely a few dozens of them. Such concentration signifies a lack of balanced and proportional network connections. Baltic and Adriatic ports situated in the SoNarA zone are getting ready for significant participation in global trade. Among them are ports in Gdynia and Gdańsk. Baltic Outlook 2030 forecasts the biggest surge in goods turnover for ports in Gdynia and Gdańsk among Baltic ports [31]. Rail transport plays a major role in effective functioning of the Valley of Logistics. Currently it accounts for barely 5% of cargo transport in international trade exchange yet this branch of transport is facing a qualitative revolution. The decision of the European Parliament and Council came into force in November 2010, establishing a network of European rail corridors [25]. One of them is corridor no. 5: Gdynia - Bologna - Ravenna/Koper/Trieste. This corridor will probably have been completed by the end of 2015.

Extension of transport infrastructure in Gdynia is decisive for reaching town and port development targets. It will be followed by optimal use of the town's spatial, economic and research resources for development of Baltic co-operation, in particular as far as the economy is concerned. The hub creates a service centre for the port sector. Gdynia is home to the majority of shipping operators present on the Polish market as well as

⁶ The Gdynia-Karlskrona Motorway of the Sea ensures development of intermodal transport infrastructure along the Baltic Link. Sections of the Karskrona-Goeteborg trail route Karskrona-Goeteborg were modernized and new intermodal terminals were built in Alvesta and Karlskrona. Two ferries which may be charged with electric power from the embankment were introduced to handle the connection. Forecasts of cargo turnover development say that this line will be used by about 400 thousand trucks in 2020.

the biggest companies dealing with freight forwarding and ship husbandry services which operate in the sea transport. The TSL sector represents an important element of the local labour market (about 18% of workplaces in Gdynia are connected with the sea port and its surroundings). Completing the investment scheme will create a totally new reality in Gdynia, increasing the port's competitiveness as the Green Gateway for TEN-T shipping connections. At the same time there are plans of adjusting the Gdańsk port to ocean liners by deepening the port, its turntables and embankments to meet the requirements of fifth generation container ships. Apart from activities aimed at key sections of transport networks, EU guidelines for TEN-T network development recommend an integrated approach to transport in towns. Under these guidelines an urban hub is a town area where TEN-T transport infrastructure, for instance ports, including passenger terminals, airports, railway stations, logistics platforms and goods terminals located in urban areas or their neighbourhood are connected with other parts of this infrastructure and the infrastructure for regional and local traffic. Thus the localization of port, rail and air terminals substantially affects both urban and regional logistics as in the case of the urban hub in Gdynia. A better understanding of this relation will help transport planners to make decisions on land use [32]. It is not possible to solve logistics problems undertaking activities which are incoherent, fragmentary or uncoordinated. The South-North Axis projects promotes very innovative and comprehensive logistics solutions on the regional and local scale through public and private cooperation forums in the form of *Logistics Competence Centres*. Their common aim is, among other things, regional development (in particular in the field of transport and logistics), integration of different sector policies into one system, supporting the economy and creation of new jobs through enhancing goods mobility, development of logistics restricting congestion on roads and developing rail, sea and inland waterways transport as well as initiating and promoting scientific research and innovation in the transport and logistics sector.

Logistics investments on the Polish Baltic Sea coast must be dynamically developed due to the number of products transported in the region as in 2030 this figure will increase 40% as compared to 2010 [31]. The greatest dynamics will be experienced by the Gdańsk Bay ports. Scandinavian investments in Poland have a very

big impact on trade dynamics. According to a report by the Scandinavian-Polish Chamber of Commerce, Scandinavia is the second biggest foreign investor in Poland following Germany. In 2013 Sweden was Poland's eleventh biggest partner worldwide considering the trade of goods. Electromechanical industry goods dominate in the structure of the trade of goods between Poland and Sweden. Equally significant are relations with other Scandinavian countries. For example, Norway was the fifteenth biggest partner as far as exports from Poland is concerned and the fourteenth in the case of imports. In 2013 Polish-Norwegian turnover was over 6 bn euro. In the same year Finland was Poland's twenty-fifth partner considering the trade of goods which amounted to over 2 bn euro [9]. Economic co-operation between Poland and Scandinavian countries has a huge growth potential. The volume of Polish-Scandinavian trade does not go with the existing opportunities and is a result of deficiencies in the region's transport system. The EU membership and growing integration in the area of the Baltic Sea help get rid of these deficiencies and, as a consequence, they are beneficial for the economy. All Polish ports which are of key importance for the economy handle fixed shipping connections with Scandinavian ports. Their biggest problem so far, which is bad accessibility, is gradually disappearing due to new investments and connections accomplished within the Baltic-Adriatic transport corridor.

4. CONCLUSIONS

While talking about the logistics infrastructure on the Polish Baltic Sea coast, it is worth paying attention to its dispersed character and constantly growing accessibility within the development zone of the Baltic-Adriatic transport corridor. The state of implementation of logistics centres in Poland still does not match the potential resulting from the location on the borders of transport corridors. Nonetheless the state of preparations to launch them is starting to enter the operational stage. This is true in particular about the area discussed in this article. Furthermore, a considerable part of new terminals and logistics centres, despite their localization in the development zone of the Baltic-Adriatic transport corridor, is linked to German ports in latitudinal relation and performs as-built functions in relation to them. Cargo air traffic does not play any greater role as airports (except Warsaw) have not reached appropriate turnover

levels, although their potential may contribute to an increase in the transport corridor effectiveness. Poland is the initial link in the transport corridor, which is why it is attributed the role of the main logistics centre of Central and Eastern Europe, especially in the context of the growing importance of trade exchange between Europe and Far East (especially China) as well as planned surge in absorption of markets in Ukraine, Russia, Belarus and countries of the Black Sea region. With the passage of time there will be surge in the role of transit through country in the direction of countries of the Adriatic, Aegean or Black Sea. All this makes the area of the Polish Baltic Sea coast a natural environment for dynamic development of logistics infrastructure. In the face of still malfunctioning mutual connections in the Polish transport system, manifesting themselves in e.g. deficiencies in connections between seaways with deep inland facilities, it may contribute to the so-called “suction effect” typical of transport corridors in relation to cargo reloaded in Pomerania ports.

REFERENCES

- [1] Sobczyński M., 2005, *Europejskie uzasadnienie przebiegu autostrady A-1 (English: European Justification of the Course of the A-1 Motorway)* [in:] *Konferencja Autostrada A-1 i łódzki węzeł komunikacyjny – drogi integrujące Polskę, 17 November 2004. In Łódź, Conference Materials*, Wydział Strategii i Analiz Urzędu Miasta Łodzi, the Valley of Logistics the Amber Road Cities Association, Łódź.
- [2] Lijewski T., 2003, *Szlaki tranzytowe przez Polskę (Transit Trails through Poland)* [in:] Stasiak A. (ed.), *Book Devoted to the Memory of Professor Marcin Maria Rościszewski*, Geopolitical Studies vol. 10, IGiPZ PAN, Warsaw, pp. 61-68.
- [3] *Consolidated versions of the Treaty on the European Union and the Treaty on the Functioning of the European Union*, Official Journal of the European Union No. C 326 as of 26 October 2012.
- [4] The Mazovian Office for *Regional Planning* in Warsaw [online] www.mbpr.pl/bac.html
- [5] TENtec Information System [online] www.ec.europa.eu/transport/themes/infrastructure/tentec/index_en.htm
- [6] *Raport o stanie zaawansowania prac nad budową infrastruktury liniowej oraz punktowej w strefie korytarza transportowego Bałtyk – Adriatyk w Polsce na rok 2012 (English: Report on the Current Progress of Construction Works of Linear and Nodal Infrastructure in the Baltic-Adriatic Corridor Zone for 2012).*
- [7] The United Nations Economic Commission for Europe website [online] www.unece.org/trans/main/tem_ter1.html
- [8] The European Commission, *Transport, Understand EU Policy*, online [online] www.europa.eu/pol/pdf/flipbook/pl/transport_pl.pdf
- [9] Toczek R., *Gdynia in BGLC*, City Development Office – Town Hall of Gdynia. Gdynia 2013
- [10] Maritime Institute in Gdańsk website www.im.gda.pl/zaklad-ekonomiki-i-prawa/projekty/zrealizowane/128-projekt-a-b-landbridge
- [11] Service of the Polish website of the Central Europe Programme, Ministry of Infrastructure and Development www.europasrodkowa.gov.pl/projekty/dostepnosc/item/158-sonora
- [12] ICE055P2 – SoNorA; O.5.2.2 – *The Logistics Competence Centre (LoCC) – case study: guidelines for public authorities*
- [13] ESPON project 1.4.3, *Study on Urban Functions*, Final Report, March 2007 [online] www.espon.eu/export/sites/default/Documents/Projects/ESPON2006Projects/StudiesScientificSupportProjects/UrbanFunctions/fr-1.4.3_April2007-final.pdf
- [14] The General Directorate for National Roads and Motorways website [online] www.gddkia.gov.pl/pl/a/9865/zielone-korytarze-z-gddkia
- [15] Fozza S., Recagno V., *Sustainable Technologies and Innovation for Green Corridors: Survey and Application*, Procedia – Social and Behavioral Sciences 48, 2012, s. 1753 – 1763
- [16] Macharis C., Pekin E., *Assessing policy measures for the stimulation of intermodal transport: a GIS-based policy analysis*, Journal of Transport Geography 17, 2009, pp. 500–508.
- [17] Scandria project website [online] www.scandriaproject.eu/
- [18] Psaraftis H. N., Panagakos G., *Green Corridors in European Surface Freight Logistics and the SuperGreen Project*, Procedia - Social and Behavioral Sciences, 48, 2012, pp. 1723 – 1732
- [19] *Green Corridors Handbook volume II*, Supporting EU’s Freight Transport Logistics Action
- [20] Joint Communication to the European Parliament and Council, *Developing a Policy towards the Arctic Region: progress since 2008 and next steps*, online [online] [www.orka.sejm.gov.pl/SUE7.nsf/Plikizal/JOIN_2012_19_PL_ACTE_f.pdf/\\$file/JOIN_2012_19_PL_ACTE_f.pdf](http://www.orka.sejm.gov.pl/SUE7.nsf/Plikizal/JOIN_2012_19_PL_ACTE_f.pdf/$file/JOIN_2012_19_PL_ACTE_f.pdf)
- [21] *Macroregional Transport Action Plan by TransBaltic*, 2012 edition, online [online] www.transbaltic.eu/wp-content/uploads/2013/05/TransBaltic-MTAP-2012-edition-5.09.pdf

- [22] *Baltic Link*, Final Report, SebTrans-Link, November 2005, online [www.sebtrans.com/link/bilder/files/sebtranslink_finalreport_eng.pdf]
- [23] *Critical raw materials for the EU*, Report of the Ad-hoc Working Group on defining critical raw materials, European Commission, June 2010, online [www.ec.europa.eu/enterprise/policies/raw-materials/files/docs/report-b_en.pdf]
- [24] Mindur L., *Transport kombinowany / intermodalny w Polsce w latach 1993–2009* (English: Combined and Intermodal Transport in Poland 1993-2009), [in:] *65-lecie szczecińskiej szkoły ekonomiki transportu. Przeszłość, teraźniejszość, przyszłość* (English: 65 Years of Szczecin School of Transport Economics (ed.) Załoga E., Stanielewicz J., Szczecin University, Academic Journals no. 628, Problems of transport and logistics, no. 13, Szczecin 2010, pp. 289-308.
- [25] Szczurek W., *Transport i Rozwój. Czas na Europę Środkową*. (English: Transport and Development. Time for Central Europe.), The "South-North Axis" Project.
- [26] Wilmsmeier G., Monios J., Lambert B., *The directional development of intermodal freight corridors in relation to inland terminals*, Journal of Transport Geography, 19, 2011, s. 1379- 1386
- [27] *The Leipzig Charter on Sustainable Development of European Cities* adopted on the occasion of an informal meeting of ministers concerning development of cities and territorial cohesion in Leipzig, on 24-25 May 2007.
- [28] Tsamboulas D., Vrenken H., Lekka A., M., *Assessment of a transport policy potential for intermodal mode shift on a European scale*, Transportation Research Part A, 41, 2007, s. 715–733.
- [29] *Valley of Logistics*, a publication by the Amber Road Cities Association, partner of SoNorA South North Axis Project.
- [30] Behrends S., *The urban context of intermodal road-rail transport – Threat or opportunity for modal shift*, Procedia – Social and Behavioral Sciences 39, 2012, s. 463 – 475
- [31] *Baltic Transport Outlook 2030, Executive Report – final version*, December 2011, online [www.baltictransportoutlook.eu/BTO2030_Executive_Report_Final_15-12-2011_new.pdf]
- [32] Allen J., Browne M., Cherrett T., *Investigating relationships between road freight transport, facility location, logistics management and urban form*, Journal of Transport Geography, 24, 2012, s. 45-57.