

ALEKSANDRA BARTOSIEWICZ ▶▶

University of Łódź

ORCID ID: <https://orcid.org/0000-0002-6464-9277>**PAULINA SZTERLIK** ▶▶

University of Łódź

ORCID ID: <https://orcid.org/0000-0003-1792-4691>

Belt and Road Initiative vs. Baltic Sea Region. The perspectives of the container transport market in Poland

Belt and Road Initiative vs. Baltic Sea Region. The perspectives of the container transport market in Poland

Abstract

Poland is a key element of the Belt and Road Initiative (BRI). It is also an active container shipping participant in the Baltic Sea Region (BSR). The aim of the article is to determine whether further development of the BRI is a threat for the Polish BSR container shipping, and vice versa. The main tools used to achieve the objectives mentioned above include a literature review, logical reasoning and statistical analysis. The results of a survey on the importance of chosen factors for the further development of the BRI in Poland, as well as the SWOT analysis of these factors are also part of the proposed study. The performed research shows that such factors as expansion of deep water infrastructure, the increase of seaport transshipment potential or competitiveness of the BSR are among biggest threats to the future of the BRI in Poland. At the same time, it seems that in the

near future, the further development of the BRI will not significantly affect the container shipping in the BSR.

Keywords: BRI, BSR, maritime logistics, container transport

Инициатива «Один пояс, один путь» и регион Балтийского моря. Будущие перспективы рынка контейнерных перевозок в Польше

Аннотация

Польша является ключевым элементом инициативы «Один пояс, один путь» (BRI). Она также является активным участником контейнерных перевозок в регионе Балтийского моря (BSR). Цель статьи – определить, представляет ли дальнейшее развитие BRI угрозу для контейнерных перевозок в Польше по региону Балтийского моря, и наоборот. Основные инструменты, используемые для достижения упомянутых выше целей, включают анализ литературы, логические рассуждения и статистические исследования. Результаты исследования важности выбранных факторов для дальнейшего развития BRI в Польше, а также SWOT-анализ этих факторов также являются частью предлагаемого исследования. Проведенное исследование показывает, что такие факторы, как расширение глубоководной инфраструктуры, увеличение перевалочного потенциала морского порта или конкурентоспособность региона Балтийского моря являются одними из самых больших угроз для будущего BRI в Польше. В то же время, похоже, что в ближайшее время дальнейшее развитие BRI не окажет существенного влияния на контейнерные перевозки в регионе Балтийского моря.

Ключевые слова: BRI, BSR, морская логистика, контейнерные перевозки

Introduction

The convenient location of Poland on the border of the European Union (EU) and the Eurasian Economic Union (EAEU) predisposes it to be a transshipment hub for containerised goods. On the one hand, Poland is one of the main participants of the container shipment in the Baltic Sea Region (BSR). On the other hand, it is also an important partner of the Belt and Road Initiative (BRI). Yet, as it turns out, Sino-Polish relations in the context of the BRI have far rarely been considered in scientific articles (Bartosiewicz,

Szterlik, 2018b, 2018a, 2020b, 2020a; Choroś-Mrozowska, 2019; Hanusik, Woźnica, 2021; Kostecka-Tomaszewska, Czerewacz-Filipowicz, 2019; Motowidlak, Kujawa, 2018), none of which refers to the possible impact of the BRI on the maritime container transport. With a few exceptions (Larcon, 2017; Nežerenko, Koppel, 2017; Scott, 2018)(Larcon, 2017; Nežerenko, Koppel, 2017; Scott, 2018), it is also difficult to find comprehensive studies on the impact of rail transport from China to Europe on the transshipment of containerised goods in the BSR. Thus, the aim of the presented article is to fill a highly visible research gap and outline the perspectives of the container transport market in Poland, as well as verify whether the further development of the BRI can be seen as a threat or a chance for the Polish container transport in the BSR.

Container transport in Poland as a part of the BSR

Russia and eight member states of the EU are part of the BSR. It is assumed that the region consists of the Scandinavian countries (Denmark, Finland, Sweden), Northern Germany (Mecklenburg, East Pomerania, Schleswig-Holstein and Hamburg), Poland, the Baltic countries (Lithuania, Latvia, Estonia) and Northern Russia (Kaliningrad and Leningrad Oblast) (*Baltic Sea Region – Investor’s Guide*, 2011). The BSR is one of the most active logistics areas in Central and Eastern Europe (CEE). Due to shipping connections with the largest ocean ports and developed land transport corridors, the BSR maritime transport system, including ports operating in the region, is an important part of the European transport system. At the same time, Baltic ports are intermediaries in a trade not only between the BSR countries but also with the EU single market and the Far and Middle East (Grzybowski, 2012).

In Europe shares of rail freight, particularly of the combined transport¹, have increased from 2009 to 2019, while shares of road and maritime freight transport have declined (Figure 2). Yet, transport in the

¹ Combined transport is a form of intermodal transport which is the movement of goods in one and the same loading unit or road vehicle, using successively two or more modes of transport without handling the goods themselves in changing modes. In this article we will use both terms interchangeably.



Figure 1. The BSR countries (Authors based on Interreg Baltic Sea Region, 2021)

BSR is still predominantly organised on road as the region is to a large extent rurally coined with a correspondingly low population density, hinterland traffic is mainly organised in trucks and semi-trailers, and the overall transport volume is comparatively low and spatially scattered (Bochynek et al., 2020).

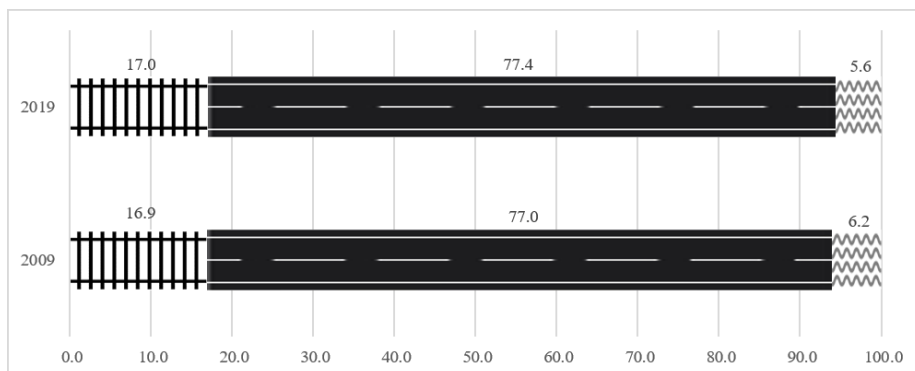


Figure 2. Share of intermodal and total rail freight in the overall modal split (in million tkm) in Europe in 2009 and 2019 (Authors based on Géhénot et al., 2020)

Although the average rail share in the overall modal split of European freight transport is about 18%, there are significant differences between the countries. Figure 3 depicts rail modal split of freight transport in the BSR countries in 2018.

Moreover, although trade exchange of the countries in the BSR is characterised by a high share of mutual turnover, when regards the combined transport's structure and traffic (where two third of the combined transport units are containers), domestic combined transport accounts for only 17%. Other 83% is covered by inbound (42%) and outbound (41%) combined transport (Géhénot et al., 2020). Interestingly, in 2018, the internal BSR combined transport traffic (without Russia), expressed in standard containers (TEU), reached approx. 440,000, with 99% connecting Germany. This means that without Germany's trade relations, the internal BSR combined transport traffic almost did not exist (Table 1).

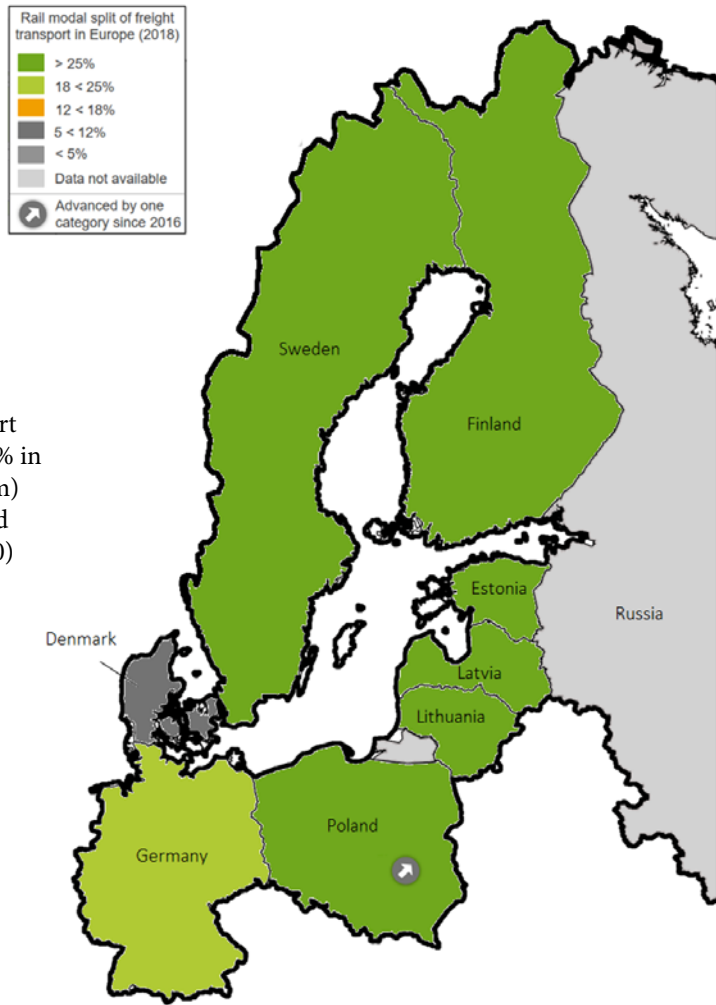


Figure 3. Rail modal split of freight transport in the BSR countries (% in total inland freight tkm) in 2018 (Authors based on Géhénot et al., 2020)

Table 1. Internal BSR combined transport traffic in 2018 (thousands TEU) (2018 Report on Combined Transport in Europe, 2019)

Country	Denmark	Estonia	Finland	Germany	Latvia	Lithuania	Poland	Sweden
Denmark	0	0	0	3 201	0	0	0	0
Estonia	0	0	0	0	0	0	0	0
Finland	0	0	0	11 284	0	0	2	0
Germany	5 509	0	0	0	0	0	64 794	185 657
Latvia	0	1 082	0	0	0	0	0	0
Lithuania	0	0	0	0	0	0	60	0
Poland	0	0	0	96 232	0	662	0	30
Sweden	10	0	0	71 088	0	0	56	0

Also Baltic container shipping is characterised by the transport of goods coming from the outside or directed outside the region. The development of trade with regards to cargo containers in intercontinental relations influenced the model of organisation of oceanic line services, based on servicing a reduced number of base ports in which the load mass is concentrated, and which are connected with smaller terminals located in the zone of gravity with feeder services (Bartosiewicz, 2020). At the same time, maritime transport on the Baltic Sea, including shortsea shipping, represents the second (after road transport) most important mode of transport in the area. For example, in 2017, the prominence of shortsea shipping of goods over intercontinental transport was particularly pronounced in Finland, Sweden, Latvia, Estonia, Poland and Lithuania (Bochynek et al., 2020). In turn, in case of Germany, Belgium and their neighbouring countries, transport on inland waterways plays a crucial role in the movement of cargo with significantly increasing volumes starting in 2014. Table 2 summarises the development of cargo volume by mode of transport for Poland's export between 2007 and 2018.

Table 2. The development of cargo volume by mode of transport for Poland's export between 2007 and 2018 (thousand tonnes) (Bochynek et al., 2020)

Country	Total cargo volume	Mode of transport			
		Inland waterway	Maritime waterway	Rail	Road
Germany	141 959	651	9 571	5 753	125 984
Czech Republic	38 250	1	-	5 776	32 473
Sweden	22 119	-	12 946	103	9 070
Netherlands	21 914	4	6 717	562	14 631
Slovakia	21 219	-	-	2 697	18 522
Italy	17 463	-	1 214	314	15 935
Lithuania	17 107	-	2 745	108	14 254

Sea and land logistics networks are created by port and logistic operators investing in logistics centres, land handling terminals and intermodal connections, as well as ship owners developing linear connections between ports and regions best equipped with logistics infrastructure. Thus, when

analysing the modes of transport in the BSR, it is also important to study the rail share of container hinterland transport in selected Baltic ports (Figure 4).

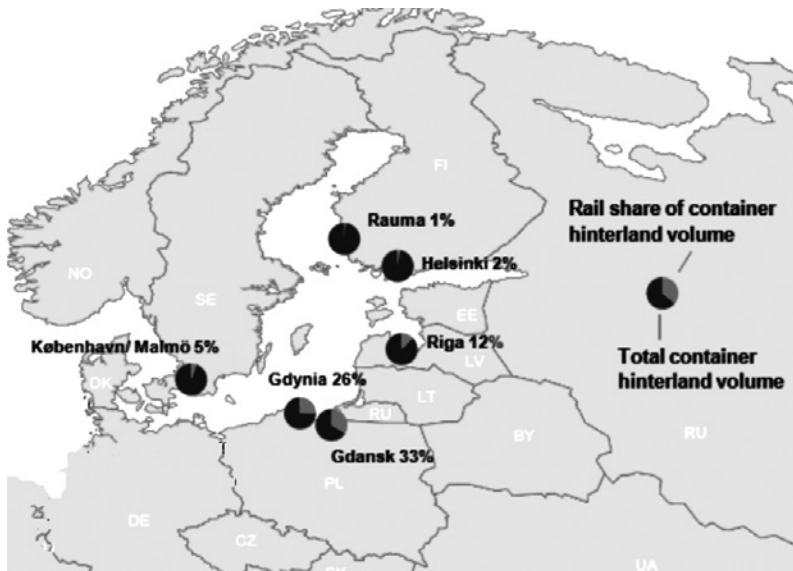


Figure 4. Rail share of container hinterland transport (only gateway traffic) in selected Baltic ports in 2017 (Authors based on *2018 Report on Combined Transport in Europe*, 2019)

Ports with a rail volume of zero or near often have no adequate connection to the rail hinterland network or have no rail connection at all. Interestingly, the Polish ports of Gdańsk and Gdynia are the only ones in the BSR with a rail modal split shares of more than 25% for container gateway traffic. This is further evidenced when we analyse seaborne container throughput and rail transport volume of these two ports in 2017. Seaborne container throughput reached 1,580 thousand TEU in Gdańsk and 710,7 thousand TEU in Gdynia, while rail transport volume accounted to 610,3 thousand TEU and 197,5 thousand TEU, respectively (*2018 Report on Combined Transport in Europe*, 2019). Still, the greatest weakness of Polish ports, compared to their competitors located in Western Europe, is the quality of communication with the economic back-up (in particular transit). Thus, for the further development of Polish seaports, it is particularly important to improve the infrastructure

of national railway lines included in the international communication networks of the TEN-T network, AGTC (European Agreement on Important International Combined Transport Lines and Related Installations), AGC (European Agreement on Main International Railway Lines) and RFC (Rail Freight Corridor), in particular the lines forming the railway corridors E-59 and C-E59 (Międzyzlesie–Wrocław–Kostrzyn–Szczecin/Świnoujście) and E-65 or C-E65 (Gdynia/Gdańsk–Inowrocław–Zduńska Wola–Tarnowskie Góry–Pszczyna), railway line No 201 Nowa Wieś Wielka–Gdynia Port, as well as sections of railway lines connecting port areas to these networks (Urbanyi-Popiołek, 2014).

According to the *Baltic Transport Outlook 2030 (Baltic Transport Outlook 2030. Strategic Network Analysis, 2011)* in the years 2010–2030, maritime transport in the BSR is expected to increase by 30%, mainly in relation to Polish ports which are the 2nd (Gdańsk) and the 3rd (Gdynia) among the biggest BSR ports in the ranking of container turnovers of individual ports in the first half of 2020² (Synak, Ołdakowski, 2020). Maritime transportation will grow due to economic growth and globalisation, increased demand for this kind of transport, the growing emphasis on efficient and environmentally friendly transport and technological developments, which will allow the introduction of new solutions in shipbuilding. The largest increase is expected in the field of container transport (by 140%). These estimates are supported by statistical data from recent years. In the years 2000–2016, the volume of containers used in world trade has been almost tripled. Since the beginning of the 21st century, the dynamics of this type of transport is positive, with the exception of 2009 and 2020. When the Covid-19 pandemic broke out in China in December 2019, its impact on European ports only started to be visible in March 2020. The top 15 ports handled 76.8 million

² It should be noted that since 2019 Poland is 4th among major BSR ports according to the total cargo turnover in thousands tonnes, just after Russia, Sweden and Finland (Błuś, 2020). At the same time the Port of Gdańsk is included in the group of the hundred largest container ports in the world according to the Lloyds List ranking and is the only Polish maritime transport hub to be included on the prestigious list of the 100 best container ports of the world prepared by the “Container Management” magazine. Furthermore, since 2019 it occupies the 15th position in the ranking of top-15 European container ports (Notteboom, 2021).

TEU in 2020 (2.8% less than in 2019). Still, almost all top-15 ports recorded a strong recovery in the second half of 2020 thereby reducing overall TEU losses for 2020 (Notteboom, 2021).

Interestingly, the ongoing transformation of the Polish economy towards increasing the share of processed goods and observed changes on the market of containerised sea transport, give a chance for the further dynamic development of transshipment of semi-general cargo in the largest Polish ports. Forecasts predict that transshipments in seaports in Poland will be characterised by a gradual increase until 2030, with the highest dynamics being demonstrated by the reloading of containerised goods. The share of trade will increase not only with regards to Asian countries but also with African and South American countries. For the further development of trade between China and Europe two Polish Baltic hubs, that is the Deepwater Container Terminal (DCT) Gdańsk and Baltic Container Terminal (BCT) Gdynia, are crucial. Container terminals located in Polish seaports naturally fit into the Baltic Sea–Adriatic Sea Corridor. Due to their location, they constitute the opening infrastructure of the corridor. The most important assets of these two hubs include their multi-functionality and versatility in the implementation of the transport function. In turn, their relative peripherality in relation to the main shipping routes results from the peripherality of the Baltic Sea itself, related to, inter alia, a natural limitation in the form of the depths of the Danish straits.

The DCT Gdańsk has already become a transport hub for 40% of goods coming from trade between Poland and the People's Republic of China (PRC). For two alliances, Ocean Alliance and 2M Alliance, Gdańsk has become one of the key ports in Northern Europe, supporting two direct services on the Asia–Europe–Asia route (Bartosiewicz, 2019). Since 2018, the BCT Gdynia has also been servicing two oceanic connections. At the same time, it is expected that some of the containers currently transhipped in the ports of Western Europe and transported to Poland by feeders, will go to Polish container terminals through large container vessels operating in regular oceanic transport. The consequence of this will be the growing importance of the so-called transshipments in Polish container terminals. Thanks to the possibility of using direct shipping services, Polish producers will stand a chance to export expansion on the Chinese market and other

Southeast Asian markets (*Program Rozwoju Polskich Portów Morskich Do Roku 2020 (z Perspektywą Do 2030 Roku)*, 2017).

The importance of the BRI for Poland

The Belt and Road Initiative (BRI) is a direct reference to the old Silk Road (SR), a historic trading route which connected China with Europe and the Middle East. It's functioning from the 2nd century BC until the mid-15th century enabled various types of exchange, not only economic, but also cultural, political, religious. Having in mind the fame of the SR, the government of the PRC decided to reactivate the initiative in order to generate additional value by creating a network of connections mainly with partners from the CEE, Africa or Pacific Asia. The BRI can be perceived as a combination of two distinct but mutually reinforcing ideas. The *road* included in the name refers to the sea connections, while the *belt* is a reference to the land network connecting China with the European countries. The BRI-participating economies represent more than one-third of global GDP, and over half of the world's population (*The Belt and Road Initiative in the Global Trade, Investment and Finance Landscape*, 2018). If maritime transport is also taken into consideration, with the inclusion of the African coast, its centre of gravity is located in Middle Asia (Colarizi, 2015).

The favourable geopolitical location of Poland makes it essential for the development of the BRI. During the International Forum held in Warsaw in 2016, the PRC's president Xi Jinping stressed the fact of the intersection of the Silk Road and Amber Road in Poland and the inclusion of the country on the China Railway Express route. The fact that two of nine corridors of the TEN-T core network run through Poland cannot be neglected, too. The Baltic Sea–Adriatic Sea Corridor runs on the axis of the A1 motorway and on the E–65 and CE–65 railway lines, and additionally takes the course of the E–59 railway line and some sections of expressways. In turn, the North Sea–Baltic Sea Corridor runs along the axis of the E–75 railway line and the Via Baltica road, as well as the axis of the A2 motorway and the E–20 and CE–20 railway lines.

Both TEN-T corridors must be considered not only in the context of the European transport system but also from the point of view of the

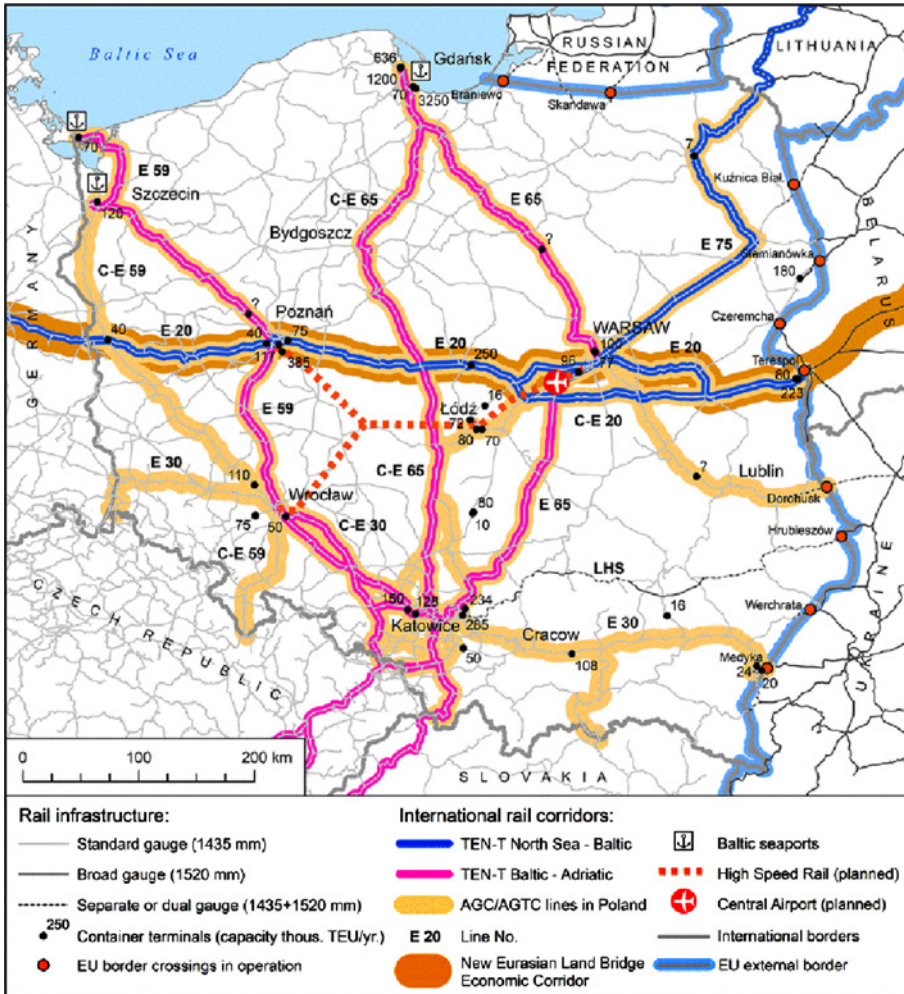


Figure 5. Rail infrastructure in Poland with the potential to support transport along the New Eurasian Land Bridge Economic Corridor (NELB) (Jakubowski et al., 2020)

development of global transport routes. The BSR countries serve the role of a hub for ground connections to the eastern and northern markets of China, Russia, Asia and other countries, while the North Sea and Adriatic ports allow reaching both North and South America and the rest of the world's commercial network by water. The development of transport corridors is

naturally influenced by trends in the European transport market, such as the rapid development of transport of containers, the development of transport in the ro-ro system, the need to develop combined transport and shortsea shipping, as well as the deepening congestion at European roads, encouraging the implementation of the *from road to sea* idea (Bursztyński, 2011). Figure 6 presents the development of total rail freight performance vs. rail transport of goods in intermodal transport units in Europe between 2009–2018, while Table 3 presents share of intermodal rail freight (in tkm) in total rail freight transport by the BSR country in 2016. This share varies between 1% and 57% across Europe. Importantly, with the exception of Germany, it is significantly low as regards the BSR countries.

Table 3. Share of intermodal rail freight in total rail freight (based on tkm) by the BSR country (without Russia) in 2016 (%) (Authors based on *2018 Report on Combined Transport in Europe*, 2019)

	Denmark	Estonia	Finland	Germany	Latvia	Lithuania	Poland	Sweden
Inter-modal rail freight	11	2	2	28	1	2	8	11

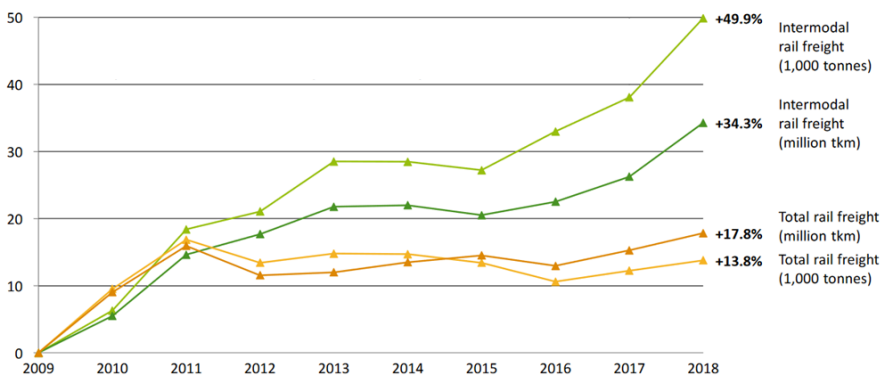


Figure 6. Development of total rail freight performance in Europe 2009–2018 (2009 = 100) (Géhénot et al., 2020)

The development of domestic unaccompanied combined transport (e.g. the transport of single containers, swap bodies and semi-trailers) in the BSR per country in 2015 and 2017 is given in Table 4. It turns out that Poland, Sweden and Finland are major contributors, both in terms of TEU and tonnes, in the total share of the BSR countries in European unaccompanied domestic traffic. Yet, although between 2015 and 2017 the traffic developments in Finland and Sweden were stable, the Polish domestic unaccompanied combined transport recorded an overall growth of 39% in TEU and 36% in tonnes. At the same time, no transports were declared for Estonia and Lithuania.

Table 4. Development of domestic unaccompanied combined transport in the BSR per country in 2015 and 2017 (Authors based on *2018 Report on Combined Transport in Europe*, 2019)

Country	TEU			Tonnes		
	2015	2017	Dev. 2015–2017 (%)	2015	2017	Dev. 2015–2017 (%)
Denmark	287	12	-95.8	2 837	182	-93.6
Estonia	-	-	-	-	-	-
Finland	10 717	10 717	0.0	128 813	128 813	0.0
Germany	3 334 870	4 141 373	24.2	35 629 640	41 377 684	16.1
Latvia	589	407	-30.9	1 300	2 290	76.2
Lithuania	-	-	-	-	-	-
Poland	719 079	1 001 615	39.3	5 913 613	8 059 205	36.3
Russia	32	1 024	>100	136	8 032	>100
Sweden	438 906	438 906	0.0	4 635 490	4 635 490	0.0

Factors influencing further development of the BRI in Poland

Taking into account the above considerations, we decided to first identify most important factors that could have major impact on the further development of the BRI in Poland and then perform the SWOT analysis regarding determinants and barriers of this development. At the same time, we tried to determine whether further development of the BRI is a threat or a chance for the Polish BSR container shipping, and vice versa.

The critical analysis of the existing literature on the BRI gives grounds for the distinction of twelve basic factors contributing to the further development of the BRI in Poland. For the purposes of this study, we decided to focus on the technological and economic issues related to this problem. The significance of each factor has been evaluated by gathering opinions of ten experts in the field who work in academics, business and non-governmental organisations. The experts represented diverse professional backgrounds, different genders and ages, various institutions and diverse viewpoints, as well as research fields (Bartosiewicz, Szterlik, 2022). The use of an appropriate survey made it possible to approach the topic from the perspective of various decision makers and then integrate the answers in order to gain a comprehensive view on the subject. Each factor has been assessed according to three possible states of nature (growth, stabilisation or decline). The validity has been described in a 5–1 Likert scale (5 – very strong impact, 4 – strong impact, 3 – medium impact, 2 – low impact, 1 – very low impact) together with indication of the negative (-) or positive (+) impact on the further development of the BRI in Poland. The average influence of each factor analysed in the study is presented in Table 5, where the factors are arranged from the most to the least influential.

Table 5. Factors influencing further development of the BRI in Poland (Authors)

Factor	Influence
Further development of main TEN-T routes	+2.0
Long-term economic Sino-Polish relations	+2.0
EU-China long-term trade relations	+1.8
Trends in rail transport	+1.6
Readiness of entrepreneurs to invest in the BRI	+1.5
Trends in intermodal freight services	+1.5
Number of intermodal transport terminals and regional logistic centres	+1.4
Availability of new technologies in railway rout construction	+1.0
Seaport transshipment potential	+1.0
Cooperation of railway carriers with combined transport operators, logistic centres, etc.	+0.7
Technical condition of railways	+0.5
Quality of railway services	0.0

The average influence of all twelve factors chosen for this study equals 1.2. Seven factors have average influence stronger than the mean of the whole group and, according to the experts, have the biggest impact on the further development of the BRI in Poland. At the same time experts indicated five factors which, in their view, have small or even no impact on the problem in question. Among the least influential factors we should list such issues as technical condition of railways or the quality of railway services, while further development of main TEN-T routes, or long-term Sino-Polish and EU-China economic and trade relations seem to be of uttermost importance for the future of the BRI in Poland.

The favourable factors, as well as possible barriers that may be encountered when developing rail freight transport in Poland, with reference to the BRI, were outlined basing on the previous considerations and the above described findings. Table 6 presents the results of the SWOT analysis carried out regarding determinants and barriers of this development.

Table 6. Railway freight transport under the BRI in Poland. The SWOT analysis (Authors)

Strengths	Weaknesses	Opportunities	Threats
Long-term economic Sino-Polish relations	Technical condition of Polish railways not relevant to the requirements of AGTC	Growing upward trend in rail transport	Ineffective cooperation of railway carriers with combined transport operators, logistic centres, etc.
EU-China long-term trade relations	Poor availability of new technologies in railway route construction	Forecasted increase in intermodal freight services	Expansion of deep water infrastructure in Polish seaports
Inclusion of Poland in the BRI economic corridors	Not enough intermodal transport terminals and regional logistic centres	Infrastructure investments in land rail container terminals	The increase of seaport transshipment potential
TEN-T corridors in Poland	Poor quality of railway services	Readiness of entrepreneurs to invest in the BRI	Competitiveness of the BSR

Three factors relating to the sea transport are listed among biggest threats to the further development of the railway freight transport within the BRI in Poland, what is shown in Table 6. From the point of view of the subject matter discussed in this article, the issue of the impact of planned infrastructural investments in the South Baltic seaports on rail transport in Poland, and the potential impact that the further development of the BRI may have on container transportation is of particular interest.

BRI – an alternative to the BSR transport in Poland?

Despite the Covid-19 pandemic, the year 2020 was very beneficial for the railways. Railway carriers transported 23.8 million tonnes of cargo (or 2,672 thousand TEU), that is 21.9% (or 25%) more than in the previous year. Moreover, the number of intermodal trains on the border with Belarus increased noticeably. Data concerning, inter alia, transit carried out by Poland in Małaszewicze and the border crossing in Rzepin indicate that on the selected routes between stations have been observed significant increases, reaching up to 100%. This growth owes to the fact that some shippers reacted to the port restrictions and chose rail transport to tranship their cargos. As the PKP Cargo informs, the Polish freight market is still growing. According to the Office of Rail Transport (ORT), in the coming years, we should expect an acceleration of this growth in connection with the further development of the BRI (*Przewozy Intermodalne w 2020 R.*, 2021).

Taking above into account, the BRI can be perceived as an alternative to the BSR transport in Poland. In our opinion, however, it should not affect the shrinkage of the BSR market. There are several reasons for this. First, as we showed earlier, there is a noticeable annual increase in the volumes serviced by the analysed region. Recent results achieved by Polish seaports in Gdańsk and Gdynia confirm it. In 2020, the DCT Gdańsk reloaded almost 1.9 million TEU, while more than 905 thousand TEU were transhipped at the Gdynia port. Second, the BRI has limited capacity. The Chinese authorities state that in 2017 nearly 350,000 TEU were transported by rail as a part of the BRI, while by the end of 2021 the volume of railway container transportation between Europe and China rocketed to nearly one million TEU. Yet, in 2017, the capacity of the Trans-Siberian railway was estimated at about

1.5–1.8 million TEU, which in practice gives less than a million TEU, or 1/8 of the annual growth in container transport in the world (Czermański, 2017). Furthermore, as regards railway transport from China through Poland further to the EU, the terminal in Małaszewicze, located 5 km from the border with Belarus is one of the route's key elements. Unfortunately, for many years, the border crossing Brześć–Terespol–Małaszewicze continues to be a bottleneck of China-Poland-EU transport of goods. Currently, an annual cargo handling capacity of all terminals in Małaszewicze totals to 223,380 TEU (Rokita, 2020). Third, taking into account course of the NELB, it can be assumed that streams of cargo transported by Poland by rail will be directed mainly to Central and Western Europe, while Northern Europe and Scandinavia will still be served by sea transport. Moreover, direct calls to Gdańsk and Gdynia guarantee faster transit times and deliveries in oceanic transport, thanks to which exporters eliminate the risk of delays resulting from transhipments in ports of North-Western Europe (Szyszka, 2018). Finally, although the transport of containers by sea lasts about five weeks, while railway transport approx. 15 days (Sárvári & Szeidovitz, 2016), we should take into account freight prices. After Covid-19 pandemic freight prices of goods transported from China to Europe has been on the rise. For example, the maritime transportation of one container from China to Germany costs approx. USD 8,600. Yet, the rail freight prices are even higher as a container from China to Germany by rail freight averages USD 13,500 as of March 2021 (*Shipping from China to Germany - Updated March 2021*, 2021).

Conclusions

As the survey conducted in this study reveals, further development of main TEN-T routes, long-term Sino-Polish and EU-China economic and trade relations are of the uttermost importance for the future of the BRI in Poland. At the same time, the performed SWOT analysis shows that such factors as irrelevant technical condition of Polish railways to the requirements of AGTC, poor availability of new technologies in railway rout construction, poor quality of railway services, as well as far too little intermodal transport terminals and regional logistic centres are main barriers to the further development of the BRI in Poland. Moreover, such factors as expansion of deep

water infrastructure in Polish seaports, the increase of seaport transshipment potential or competitiveness of the BSR are among biggest threats to the future of the railway freight transport within the BRI.

Taking all the above into account, it seems that in the near future the further development of the BRI will depend on the long-term infrastructure investments. Modernisation of rolling stock, infrastructure investments and improvement of capacity on routes used in rail transport may contribute to the transfer of part of the car transport to rail, and consequently to the implementation of pro-ecological guidelines of the White Paper and reduction of greenhouse gas emissions. Furthermore, the competition from the BRI may bring some tangible, positive effects in the form of increasing the quality of services offered by ship owners operating in the BSR, improving the capacity of transport corridors existing in Poland, or eliminating bottlenecks in the BSR transport system. Thus, the further development of the BRI should not significantly affect the container shipping in the BSR and may be perceived as a chance for the Baltic container transport in Poland.

ALEKSANDRA BARTOSIEWICZ, PHD

Department of Operational Research
Faculty of Economics and Sociology
University of Łódź
39 Rewolucji 1905 r. St., 90–214 Łódź
aleksandra.bartosiewicz@uni.lodz.pl

PAULINA SZTERLIK, PHD

Department of Operational Research
Faculty of Economics and Sociology
University of Łódź
39 Rewolucji 1905 r. St., 90–214 Łódź
paulina.szterlik@uni.lodz.pl

References

- 2018 Report on Combined Transport in Europe. (2019).
- Baltic Sea Region – Investor’s Guide. (2011).
- Baltic Transport Outlook 2030. Strategic Network Analysis. (2011).
- Bartosiewicz, A. (2019). DCT Gdańsk – history, development and operation of the largest and most modern maritime container terminal in Poland. *Studia Maritima*, 32(1), 259–274.
- Bartosiewicz, A. (2020). *Transport morski kontenerów. Rola i znaczenie intermodalnych terminali przeładunkowych*. Łódź: Wydawnictwo Uniwersytetu Łódzkiego.
- Bartosiewicz, A., Sztterlik, P. (2018a). Łódź’s benefits from the One Belt One Road initiative. *International Journal of Logistics Research and Applications*, 22(1), 47–63. <https://doi.org/10.1080/13675567.2018.1526261>.
- Bartosiewicz, A., Sztterlik, P. (2018b). Nowy Jedwabny Szlak a relacje polsko-chińskie. *Ekonomia XXI Wieku*, 4(20), 7–21. <https://doi.org/10.15611/e21.2018.4.01>.
- Bartosiewicz, A., Sztterlik, P. (2020a). New Silk Road – An Opportunity for the Development of Rail Container Transport in Poland? *Nowa Polityka Wschodnia*, 1(24), 9–27. <https://doi.org/10.15804/npw20202401>.
- Bartosiewicz, A., Sztterlik, P. (2020b). *The New Silk Road in Poland. Current State and Perspectives*. Łódź: Wydawnictwo Uniwersytetu Łódzkiego.
- Bartosiewicz, A., Sztterlik, P. (2022). The STEEPVL and scenario analyses of the development of the Belt and Road Initiative in Poland. *Innovation: The European Journal of Social Science Research*, 1–27. <https://doi.org/10.1080/13511610.2021.2023004>.
- Błuś, M. (2020). Baltic port market in 2019. *Baltic Transport Journal*, 2, 37–41. <https://baltictransportjournal.com/index.php?id=1113>.
- Bochynek, C., Michel, J., Feyen, E., Nowak, M. (2020). *Overview of the combined transport market in the BSR*.
- Bursztyński, A. (2011). Dostępność komunikacyjna portów Gdańska i Gdyni w aspekcie rozbudowy sieci drogowej zaplecza portowego. *Logistyka*, 5, 1009–1018.
- Choroś-Mrozowska, D. (2019). The Chinese Belt and Road Initiative from the Polish Perspective. *Comparative Economic Research. Central and Eastern Europe*, 22(2), 39–53.
- Colarizi, A. (2015). *China and Kyrgyzstan: So Near, Yet So Far*. The Diplomat. <https://thediplomat.com/2015/08/china-and-kyrgyzstan-so-near-yet-so-far/>.
- Czermański, E. (2017). Baltic Shipping Development in Maritime Spatial Planning Aspect. *Studia i Materiały Instytutu Transportu i Handlu Morskiego*, 14, 48–64. <https://czasopisma.bg.ug.edu.pl/index.php/studiaiaterialy/article/view/98/29>.
- Géhénot, S., Lambert, E., Schultze, R.-C., Lahrmann, M. (2020). *2020 Report on Combined Transport (CT)*.
- Grzybowski, M. (2012). Warunki rozwoju sieci logistycznych w regionie Morza Bałtyckiego. *Logistyka*, 5, 433–442. <https://www.logistyka.net.pl/bank-wiedzy/item/85286-warunki-rozwoju-sieci-logistycznych-w-regionie-morza>.
- Hanusik, A., Woźnica, A. (2021). Strategic analysis for Poland as a European hub for Belt and Road Initiative. *Journal of Economics and Management*, 43, 90–109. <https://doi.org/10.22367/JEM.2021.43.05>.

- Interreg Baltic Sea Region. (2021). *Facts & Figures 2021-2027 - Interreg Baltic Sea Region*. <https://interreg-baltic.eu/get-funding/programme-2021-2027/>.
- Jakubowski, A., Komornicki, T., Kowalczyk, K., Miszczuk, A. (2020). Poland as a hub of the Silk Road Economic Belt: is the narrative of opportunity supported by developments on the ground? *Asia Europe Journal*, 18(3), 367–396. <https://doi.org/10.1007/S10308-020-00571-6>.
- Kostecka-Tomaszewska, L., Czerewacz-Filipowicz, K. (2019). Poland – A Gate to the EU or a Bottleneck in the Belt and Road Initiative. *European Research Studies Journal*, XXII(4), 472–492. <https://doi.org/10.35808/ERSJ/1524>.
- Larcon, J.-P. (ed.). (2017). *New Silk Road: China Meets Europe In The Baltic Sea Region. A Business Perspective*. World Scientific. <https://www.amazon.com/New-Silk-Road-Business-Perspective/dp/B07BF3T9G4>.
- Motowidlak, U., Kujawa, M. (2018). *Transport towarów w projekcie One Belt and One Road jako component globalnego łańcucha dostaw*. Łódź: Wydawnictwo Uniwersytetu Łódzkiego. <https://doi.org/10.18778/8142-397-7>.
- Nežerenko, O., Koppel, O. (2017). The Baltic Sea Macro-Regional Transport Cluster as an Element of the Silk Road Economic Belt. *Croatian International Relations Review*, XVIII(78), 77–95. <https://doi.org/10.1515/cirr-2017-0008>.
- Notteboom, T. (2021). *Top 15 containers ports in Europe in 2020*. <https://www.porteconomics.eu/top-15-containers-ports-in-europe-in-2020/>.
- Program rozwoju polskich portów morskich do roku 2020 (z perspektywą do 2030 roku)*. (2017).
- Przewozy intermodalne w 2020 r.* (2021).
- Sárvári, B., Szeidovitz, A. (2016). The political economics of the New Silk Road. *Baltic Journal of European Studies*, 6(1), 3–27. <https://doi.org/10.1515/bjes-2016-0001>.
- Scott, D. (2018). China and the Baltic States: strategic challenges and security dilemmas for Lithuania, Latvia and Estonia. *Journal on Baltic Security*, 4(1), 25–37. <https://doi.org/10.2478/jobs-2018-0001>.
- Shipping from China to Germany - Updated March 2021*. (2021). <https://guidedimports.com/shipping-from-china-to-germany/>.
- Synak, E., Ołdakowski, B. (2020). *Baltic ports with a decrease in turnovers in the first half of 2020*.
- Szyszkła, A. (2018). Bezpośrednie kontenerowe serwisy dalekowschodnie z Gdańska szansą dla rozwoju eksportu polskich produktów spożywczych. *Studia i Materiały Instytutu Transportu i Handlu Morskiego*, 15, 1–14.
- The Belt and Road Initiative in the global trade, investment and finance landscape*. (2018).
- Urbanyi-Popiołek, I. (2014). Uwarunkowania rozwoju terminali promowych w polskich portach jako elementu infrastruktury Korytarza Bałtyk–Adriatyk. *Problemy Transportu i Logistyki*, 27, 195–208.
- Ustawa z dnia 20 grudnia 1996 r. o portach i przystaniach morskich, Dz.U. 1997 nr 9 poz. 44.