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ADAPTATION OF POLISH REGIONS TO THE CHALLENGES AND OPPORTUNITIES OF THE BELT AND ROAD INITIATIVE

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ABSTRACT

The Belt and Road Initiative (BRI) is an international project focused on creating a network of infrastructure and strengthening trade links, primarily between China and Europe. Transport of goods within the BRI is conducted through one maritime and six rail economic corridors, one of which (New Eurasian Land Bridge) crosses the territory of Poland. This article covers issues related to the impact of the BRI on the regions of the participating countries and aims to determine the position of Podlaskie voivodeship compared to other Polish voivodeships in the BRI. To achieve this aim, a multi-stage study was conducted, including the design of a set of quantitative factors determining the position of voivodeships in the BRI, evaluation of the importance of the factors during the expert study, collection and normalisation of quantitative data, and comparative analysis of the factors. Research results show that, given the adopted methodology, the Podlaskie voivodeship is ranked 11th out of 16 Polish voivodeships in terms of its position in the BRI. This article's findings contribute to the discussion on development opportunities in the Podlaskie region in the BRI context. They also motivate comprehensive research on the strategy for the widest possible inclusion of Podlaskie in the BRI's activities and provide an important stimulus for the region's development.

KEY WORDS

New Silk Road, Belt and Road Initiative (BRI), Podlaskie voivodeship

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INTRODUCTION

The Belt and Road Initiative (BRI) is an international project that will be celebrating its 10th anniversary in 2023. It was initiated by the People's Republic of China (PRC) President Xi Jinping in

2013. In September 2013, during a visit to Nazarbayev University in Astana, Kazakhstan, President Xi delivered a speech in which he proposed the creation of the "Silk Road Economic Belt". A month later, in October 2013, during a speech at the Indonesian

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Parliament in Jakarta, he expanded this concept with a parallel initiative of the “21st-Century Maritime Silk Road”. The two projects have been merged under “One Belt and One Road” and later renamed “Belt and Road Initiative”. Later, the infrastructural scope of BRI was extended to include the initiative of the Northern Sea Route (also called the Polar Silk Road), a maritime route linking China and Europe via the Arctic Ocean (Tillman et al., 2018, p. 348).

Even though the BRI is widely present in today’s global economy and involves an increasingly larger part of the world in its physical and economic scope, it still lacks a precise definition. It is frequently perceived as an emerging network of infrastructure links to strengthen trade connections between China and Europe (Bartosiewicz & Sztterlik, 2020, p. 7). But in a wider context, this project can be seen as an open platform for cooperation between the participating countries. Despite its vague scope, the BRI has undeniably become a project of global economic importance, with the potential to have a real impact on the economic situation of the member states. Investments under the BRI often help involved countries improve their infrastructure and increase trade and connectivity among themselves and the world. According to PwC, investments gathered under the BRI can help meet some infrastructure needs in the developing part of Asia (Wijeratne et al., 2017, p. 12).

The BRI has been attracting considerable academic interest since the beginning. Given its vast political and economic implications (such as estimated financial scale, the number of countries and actors involved or its geographic scope), the scholarly attention is not surprising. However, the interdisciplinary multiplicity of aspects related to the BRI and the complexity of the subject causes problems in conducting related research. According to Blanchard (2021, p. 237), to provide analyses of substantial value for academics, businesspeople, and policymakers, BRI researchers should consider making several adjustments.

One of these adjustments should focus on a more in-depth BRI analysis in specific regions or countries instead of looking at the BRI in its entirety, as the subject is too comprehensive (Blanchard, 2021, p. 240). This article unintentionally follows this advice, as it covers issues related to the BRI’s impact on regions of participating countries. The research aims to determine the BRI position of Podlaskie voivodeship compared to other Polish voivodeships. To achieve this objective, the authors conducted a multi-stage quantitative study.

The paper is structured as follows. The first chapter presents the results of a literature review on the BRI’s launch and development and its regional influences based on a case study of a particular member country. It also includes a discussion on Poland’s place in the project. The second chapter describes the research methodology that has been adopted. The third chapter presents research results related to Polish voivodeships’ ranking in the context of the BRI. The fourth chapter includes an in-depth analysis and discussion of the obtained results. In conclusion, the authors explain the study’s limitations and indicate the directions for further research.

1. LITERATURE REVIEW

1.1. PROJECT’S GENESIS, SCOPE AND DEVELOPMENT OVER THE YEARS

The first mentions of the will to recreate the ancient Silk Road date back to 1994. During the visit to Central Asia countries, China’s Prime Minister Li Peng proposed to further develop and stabilise Sino-Central Asian relations, economic cooperation and non-inferential ties through collaboration along a “New Silk Road” (Ali, 2020, p. 74–75). However, it was not until 19 years later that Xi Jinping’s administration formally inaugurated efforts to create a modern version of the Silk Road. It was his government that conceptualised “Two Centenary Goals” for Chinese society. The first goal was aimed at transforming China into a “moderately prosperous society of a higher level to the benefit of well over one billion people” and was to be achieved by 1 July 2021, the centenary of the founding of the Chinese Communist Party (CCP). However, from a global point of view, it is the second objective — “Great rejuvenation of the Chinese people” — that deserves special attention (Góralczyk, 2016, p. 290–291). According to the Chinese government, this will be the construction of a “prosperous, powerful, democratic, civilised and harmonious socialist modernised country”, set to be accomplished by 1 October 2049, the centenary of the founding of the PRC (Lu, 2016, p. 80). The first objective is directed at the domestic policy of the country, while the second is a strong allusion to the increasingly assertive and world-open external policy pursued by contemporary China. The Belt and Road Initiative can be perceived as the element of this second goal, as this project involves vast foreign cooperation.

In their pursuit to define the project most thoroughly, the researchers created several different terms to describe the BRI. The academic literature provides terms ranging from more general, such as “connectivity venture” (Blanchard, 2021, p. 236), “geostrategic project” (Góralczyk, 2016, p. 293), or “development programme” (Erschbamer et al., 2020, p. 3), to more specific, such as “logistics endeavour” (Nazarko & Kuźmicz, 2017, p. 497) or “transport network” (Wagener et al., 2020, p. 198). Researchers hold similarly divergent views on the territorial scope of the project. In the initial phase of the project’s development, the identification of BRI member states was fairly easy and possible through authoritative documents and public statements. However, it became more difficult over time as the project expanded to more geographic realms, including the Arctic or Latin America (Blanchard, 2021, p. 239). The most common assumption is that there are around 70 BRI member states with territories located along the seven defined BRI routes, one maritime and six land (OECD, 2018, p. 12). One of the limitations of this approach is the fact that the line between an infrastructure project funded by China and the BRI project is often unclear (Teo et al., 2019, p. 3), and as the project is expanding, the BRI “brand” is often being applied to many other China-financed projects (Hughes et al., 2020, p. 584), which to some researchers equals the country’s participation in the BRI, but in some instances that may not be the case. As far as the material scope of the project is concerned, researchers are slightly more unanimous. Teo et al. (2019, p. 9) proposed a typology of the BRI infrastructure including four categories: transport (road, rail, airports, seaports, rail terminals), energy (pipelines, power lines, dams, coal, wind, solar, mines), communication (fibre-optic cables, receiving stations) and economic (Special Economic Zones, development incentives, financial mechanisms).

According to Blanchard (2021, p. 239), “soft” infrastructure, such as bilateral investment treaties or free trade agreements, also constitutes part of the BRI. This opacity of the BRI may be understood as one of its key characteristics. Narins and Agnew (2020, p. 829) suggested that the project’s vagueness is intentional because it makes the BRI a flexible container for necessary but unforeseeable future adaptations. However, regardless of the difficult-to-define geographical and subject matter scope, the BRI is undoubtedly a project that covers a significant part of the world with its reach and impact.

One of the declared foundations of the BRI emphasised by the Chinese side is the formula “win-win cooperation”, meaning the cooperation that benefits all parties involved (Nobis, 2016, p. 8). On the one hand, this concept appears to convince the world decision-makers, as, over the years, many countries have expressed their willingness to participate in the BRI. On the other hand, the controversy over China’s increasing presence and influence in member countries, including accusations of the BRI being a “debt trap” and the example of “new colonialism” (He, 2020, p. 139), must also be addressed. The resolution on this issue remains a matter of each researcher’s own conclusions, as to date, there has been no comprehensive study identifying, classifying and measuring the benefits and costs of the BRI for both China and member states. The existing literature contains two lines of argument: the first focuses on collaboration (cooperation, co-creation, joint growth), and the second — on self-interest, highlighting China’s one-sided goals to grow and prosper (Thürer et al., 2020, p. 8). For example, Nawrot (2018, p. 276) stated that Chinese investments should be widely accepted in Europe, as they may stimulate market growth, and Yu argued that the potential benefits coming from the BRI would be mutual (2017, p. 365). On the other hand, Ma (2017, p. 152) pointed out that China wanted to use the BRI to increase the openness of other countries’ markets to its investments and products, but at the same time close its own market to foreigners. According to Nazarko et al. (2017, p. 1213), China is going to benefit the most from the BRI, given their export surplus and ever-growing trade imbalance. Blanchard listed the following factors as potential benefits of participation in the BRI: increased economic growth, better infrastructure, job creation, poverty alleviation and regional economic integration. Potential costs include higher trade deficits, the loss of domestic and foreign policy independence, increased pollution, environmental degradation and social dislocation (Blanchard, 2021, p. 243).

There is also no academic consensus on China’s true rationales behind the project’s establishment. A whole lot of potential reasons for China to launch such a project have been expressed in academic literature, including (i) seeking political support and legitimacy internationally (Ma, 2017, p. 152), (ii) reducing internal excess production capacities (Holslag, 2017, p. 49; Jones & Zeng, 2020, p. 1422), (iii) accelerating development and the ensuring stability of western provinces (Chaisse & Matsushita,

2018, p. 169; Nazarko et al., 2016, p. 3), (iv) ensuring reliable access to other countries natural resources (He, 2020, p. 142; Holslag, 2017, p. 51), or even (v) stimulating China's import to satisfy Chinese upper-class consumers (Alon et al., 2018, p. 369). Although these rationales remain uncertain, there seems to be an agreement that the BRI already has a tangible effect on the member countries' economies and global economy, as reflected in various statistics. The World Bank analysts claim that BRI projects could help alleviate extreme poverty for up to 7.6 million people (earning less than USD 1.90 per day) and moderate poverty for 32 million people (earning less than USD 3.20 per day) in BRI and in non-BRI economies. This may be possible by increasing trade, complementary trade facilitation reforms and preferential reduction of tariffs (The World Bank, 2019, p. 5, 59, 70). It is estimated that the development of infrastructure within the BRI may reduce delivery times by 1.2 to 3 % globally (Choroś-Mrozowska, 2019a, p. 15), and by up to 12 % for countries located along the economic corridors (The World Bank, 2019, p. 5). Of course, it must be considered that these forecasts were made before the outbreak of the global pandemic, so the presented figures have become outdated to some extent. However, they still provide information on the potential strength and scale of the BRI's impact in the context of the global economy.

1.2. IMPACT FACTORS OF THE BRI ON THE REGIONS OF THE MEMBER STATES

The BRI is undeniably a project that covers a large part of the world, despite the exact territorial scope of the project being ambiguous. Even though BRI's transport corridors, which are the main territorial axes of the project, have been outlined only in Europe, Asia and Africa so far, it is easy to overestimate the project's real coverage. Some researchers go so far as to consider China's cooperation with Latin America as a part of the BRI (He, 2020; Toro-Fernandez & Tijmes-Ihl, 2021). However, this expansion of the BRI scope can be considered rhetorical for the time being. For the purpose of this paper, it is considered that so far, the BRI mostly focuses on two continents: Asia and Europe, with the key regions being Central Asia, South-East Asia, Middle East and Central and Eastern Europe (Garlick, 2020, p. 4). The identified regions can be considered as the first level of cooperation within the BRI. The second level encompasses bilateral relations between China and

the project's member countries. The third cooperation level centres on the most important regions of selected countries. The first level of cooperation is meant to facilitate regional economic integration and takes place through such platforms as Shanghai Cooperation Organisation, "16+1" format or China-Arab States Cooperation Forum (Yu, 2017, p. 356). The second level of cooperation, expressed through bilateral relations, is implemented through agreements signed by heads of state, while the third level is mostly done through investments targeting specific business outcomes. Thus, the more limited the scope of cooperation within the BRI, the less this cooperation takes place on the basis of ideas and more on the basis of specific projects. It is through the projects and their results that the opportunities for regional development and the benefits for the member countries of the BRI can be considered.

Investments within the scope of the BRI are mainly focused on the network of transport corridors, covering the construction or modernisation of transport infrastructure (road, rail, air and sea). For many member states, especially those with a low level of development, the possibility of receiving economic support from China means a chance to escape the low or middle-income trap (Choroś-Mrozowska, 2019a, p. 14). These countries have major deficiencies in transport-related infrastructure, which limit their productivity, increase the cost of doing business and reduce their attractiveness to outside investors. However, the costs involved in filling these gaps are usually beyond the budget capabilities of developing countries. In this situation, China, as a new source of capital, ideas and know-how, may contribute to bringing a member state's previously unprofitable industrial capacity into operation (Vangeli, 2020, p. 24). This renewed industrial capacity, in combination with other capital investments as well as greenfield projects, has the potential to influence the economic landscape of participating regions and countries. The population structure of such places is often characterised by a high proportion of young people struggling with underdeveloped labour markets and high unemployment. The development of infrastructure, trade and industry can give BRI member regions and states the opportunity to realise their potential and embark on a path of growth, including the creation of countless jobs.

The infrastructural projects being developed within the BRI are a bold display of China's influence and capabilities. At the same time, the long-term

effects of the sudden explosion of Chinese construction projects in developing countries are not yet entirely clear. Even though the potential for economic development resulting from participation in the BRI is evident, there is still space for organisational improvement. According to Thees (2020, p. 2), the most prominent issues related to BRI projects remain: the unclear local effects, a lack of transparency and fears around Chinese dominance. These aforementioned local effects include environmental concerns, as there have been cases where investors have not carried out environmental impact studies in relation to launched projects (Wang & Resare, 2021). Among the risks cited in this context, there are also concerns of social and religious background about working with Chinese workers and companies, increased financial dependence on China, or the risk of losing control over strategic assets, one of them being the country's energy sector (Rahman, 2020, p. 7). Vakulchuk and Overland noted that another potential risk associated with the rapid, uncontrolled growth of BRI-related investment in the region is bringing up a possibility to reinforce bad governance and corruption and provoke profit-seeking behaviour and competition between different interest groups (Vakulchuk & Overland, 2019, p. 119).

The decision to join the BRI must be preceded by a thorough analysis of the potential benefits and costs for every country. Serbia can serve as an example of how the BRI can influence, positively and negatively, the development of member countries and regions. In March 2017, the European Union's (EU) foreign policy chief Federica Mogherini described the Balkans as "the chessboard where the big power game can be played" (Makocki, 2017) and Serbia fits into this metaphor quite well. According to Dimitrijevic (2017, p. 68), the Serbian foreign policy strategy is designed on four pillars, namely the EU, Russia, the United States and China. Russia was once considered Serbia's most important economic partner, but now China seems to be taking its place. Since 2009, there has been a strategic partnership between these two countries, expanded in 2013 and raised to the high level of comprehensive strategic partnership in 2016 (Obradović, 2018, p. 197). As one of the poorer countries in Europe, with an unstable economy, high levels of unemployment and corruption and major deficiencies in key infrastructure, Serbia is rather receptive to external stimuli for development, one of them being Chinese loans and investment. As for the Chinese side, the investors see the advantages of Serbia's geographical location in

a "transit zone" between east and west, and between north and south Europe. This is reflected in the range of investments underway, including a high-speed railway, the Land-Sea Express Route, designed to link the Chinese-owned port in Piraeus, Greece, with Budapest, through Skopje and Belgrade (Barisitz, 2020, p. 63). Other prominent examples of the Chinese investment activity include the purchase of the Serbian steel mill in Smederevo and Mining and Smelting Combine Bor (RTB Bor) (Bugarčić et al., 2020, p. 24). Although nowadays Chinese investments are mainly merger and acquisition oriented (Choroś-Mrozowska, 2019b, p. 49; Ma, 2017, p. 151), some greenfield investments are also present in Serbia, some examples being the Shandong Linglong tire factory, the Minth Automotive Europe and Xingyu Automotive Lighting Systems factories, or the industrial park in Borca (Paszak, 2020).

These projects can undoubtedly have a positive impact on the momentum of Serbia's development. For example, the transfer of the nearly bankrupt Smederevo steel mill and RTB Bor into the hands of Chinese companies has saved roughly 5 000 jobs each in their respective regions (Surk, 2017). In the Podunavlje District, which is one of the less developed and poorer districts of Central Serbia, the Smederevo steel mill is an important employer for the local population, so the Chinese investment has had a real impact on the economic situation of the region's inhabitants. Telekom Srbija's growing cooperation with Huawei in the construction of 5G networks, as well as in the development of urban monitoring in Belgrade (Pantovic, 2020), can positively affect the quality of life of citizens. The close cooperation between the two countries also resulted in Serbia receiving substantial aid from China in the form of medical equipment and vaccines against COVID-19. On the other hand, it is also important to consider possible disadvantages related to BRI projects in Serbia. Chinese industrial investments are said to be burdened with negative environmental impact, resulting from investors' failure to carry out environmental and social impact assessments, as well as from repeatedly exceeding permitted emissions of harmful elements, including sulphur dioxide and arsenic (Wang & Resare, 2021; Pantovic, 2020). As for the Land-Sea Express Route, The European Commission (EC) started investigating the project for possible breach of the European competition laws related to public tenders for large transport projects (Obradović, 2018, p. 197). The EC investigation has involved only Hungary (as a member state), but Ser-

bia was urged to strengthen standards of legal compliance and warned that distancing itself from EU guidelines may threaten the success of the accession process (Wang & Resare, 2021). In addition, the loans taken out for investments, usually for 20–30 years and at interest rates of 2.0–2.5 %, will burden Serbia's budget for many more generations. Although some scholars describe the BRI investment in Serbia as a huge opportunity (Dimitrijević, 2017, p. 77), necessary for the accomplishment of the development goals (Bugarčić et al., 2020, p. 23), others focus more on the negative side effects, such as national stability and security dilemmas (Mišev et al., 2018, p. 241). Therefore, the evaluation of the Chinese presence in Serbia remains unsettled.

1.3. POLAND'S PLACE AND ROLE IN THE BRI SO FAR

The international affairs between Poland and China, renewed in 1991, have for many years been characterised by a mutual desire to maintain good relations and enhance economic cooperation (Bartosiewicz & Szterlik, 2018, p. 8). The milestones of this relationship have been the meetings of the heads of state of the two countries, which have taken place over the years and have resulted in signing multiple cooperation agreements. The most significant events include issuing the joint communiqué in 1997, which stated that the two states had established cooperation in the fields of economy, trade and technology (Wizyta oficjalna..., 1997), and signing a joint statement on the establishment of strategic partnership relations in 2011 (Polsko-chińskie..., 2011). Apart from looking at the bilateral relations between the states, one should also consider the milestone of Poland joining the EU in 2004. Since then, Poland has also been a side to all EU–China relations. The EU has been China's largest economic partner for years, and since 2020, China has replaced the United States as the EU's largest economic partner (China-EU..., 2021). However, Poland, as a member state, does not have the authority to decide on behalf of the EU on the dynamics of EU–China relations.

The third dimension of Sino–Polish relations is the 16+1 platform. This platform was initiated in 2011 by China with a group of sixteen countries from the Central Eastern Europe (CEE) region, including Poland. Since 2012, several 16+1 summits have been held (the first in Warsaw), during which plans for specific investments in the CEE area were negotiated, and agreements on their implementation were signed

(Bartosiewicz & Szterlik, 2018, p. 9). The appropriateness of a format such as 16+1 can be seen, given the difference in the size of the Chinese economy compared to the economies of the CEE area. Even Poland, being one of the biggest CEE states, can be compared to some Chinese provinces in terms of size and is twice smaller than some of them in terms of GDP (Kamiński, 2019, p. 233). However, among the criticisms voiced against this platform, researchers point to the lack of tangible results of its functioning and the implementation of a small part of the plans created so far (Góralczyk, 2017, p. 157).

As it can be noticed, in the case of two out of three dimensions of Sino–Polish cooperation (EU and 16+1 membership), the rate and the momentum of relations' development is relatively limited. The bilateral relations provide the greatest opportunity for Sino–Polish cooperation. Poland officially accessed the BRI in 2015, when a cooperation agreement between the countries was signed during President Andrzej Duda's visit to the PRC, concerning, among other things, the cooperation within the BRI (Tomaszewska & Pohl, 2019, p. 168). But the actual cooperation started in 2013 when the first regular rail link between the Polish city of Łódź and the Chinese city of Chengdu was launched (Choroś-Mrozowska, 2019b, p. 42). Since that time, relations between Poland and China have deepened to some extent, including the establishment of partnerships between cities and regions (Kamiński, 2019, p. 232), increased Chinese foreign investment in Poland (Kostecka-Tomaszewska & Czerewacz-Filipowicz, 2019, p. 482), and growing cooperation in fields of science and education (Nazarko & Kuźmicz, 2017, p. 501).

However, in terms of BRI's main component, which is infrastructural development, no significant progress has been made, and in recent years, Polish authorities have not taken any steps towards greater involvement in the BRI. The Polish government does not seem to have a consistently implemented long-term strategy of foreign policy development towards China, while its position towards the BRI is described as "reactionary" (Mrozek, 2018). However, another option for deepening the relationship within the BRI could be the cooperation between member state regions and Chinese provinces, which are very active in the project. The equivalent of Chinese provinces in Poland is 16 local government units called voivodeships. Although they have limited constitutional powers, as Poland is a unitary state, they have some competences of their own and can develop

cooperation with foreign regions (Ustawa z dnia 5 czerwca..., 1998).

In determining Polish regions that have the best predisposition to engage in the BRI, the location of Poland should be considered on the map of Eurasia and the map of BRI economic corridors. Poland's eastern border marks the external border of the EU and the Eurasian Economic Union (EAEU), which is an integration group comprising Russia, Kazakhstan, Belarus, Armenia and Kyrgyzstan. Through the territory of Poland runs the New Eurasian Land Bridge (NELB), which is one of three BRI land corridors reaching Europe, running through Kazakhstan, Russia and Belarus. In comparison to the other two corridors (the Northern Corridor running through the Siberian Railway and the Central Corridor running through Central Asia), it is the shortest connection with the best condition of infrastructure and, therefore, it is the most frequently used (Jakóbowski et al., 2018, p. 41). Thanks to the customs union between Russia, Belarus and Kazakhstan within the EAEU, the NELB involves only two customs boundaries (Czerewacz-Filipowicz, 2019, p. 32), which makes it the most economically viable option. At the Kazakh-Chinese and Belarusian-Polish borders, the transported goods have to undergo customs procedures as well as reloading, due to the changing width of the railway gauge, which in China and Poland is 1435 mm, while in the territory of the former USSR, it is 1520 mm. Further advantages of Poland's location are several major European transport routes intersecting on the country's territory, namely, two out of nine Trans-European Transport Network (TEN-T) corridors, the Amber Rail Freight Corridor (Bartosiewicz & Sztelik, 2022, p. 5), and corridors Via Carpatia, Via Baltica and Rail Baltica. Also, Poland has access to the Baltic sea, which creates opportunities for intermodal transport. All these location features are of great importance from the point of view of further distribution of goods in Europe.

Some Polish regions seem eager to benefit from the advantages of Poland's location and are establishing and deepening relations with their eastern counterparts independently. Particularly those located in central and eastern Poland are predisposed to develop their transport offer in the context of the BRI and benefit from the provision of logistics services and infrastructure or customs handling of goods. The Łódzkie voivodeship, located in central Poland, is an example of cooperation established and maintained since the beginning of the BRI. Coordinated actions of private business, local authorities

and academia led to tangible results, e.g., opening the first regular railway connection with China in 2013, launching several new transshipment terminals, opening a permanent office in Chengdu or establishing the Department of East Asian Studies at the University of Łódź (Kamiński, 2019, p. 238). In the case of the Lubelskie voivodeship, located in eastern Poland, a success factor was the fact that the Terespol/Brest border crossing and the associated transshipment area of Małaszewicze, are located in the region. In 2020 the Małaszewicze terminal handled more than 90% of the volume of goods reaching Europe via the New Eurasian Land Bridge. However, the capacity of the transshipment area is no longer sufficient. Trains coming from China often have to wait up to several days before being reloaded, and an increasing part of the transit is being redirected via other routes, including Kaliningrad Oblast, Lithuania, Slovakia or Hungary (Antonowicz, 2019, p. 157). Increased involvement of other eastern regions of Poland may provide a solution to this problem. In this context, the potential of the Podlaskie voivodeship, located in north-eastern Poland, is worth noting. Podlaskie has four border crossings with Belarus that could be expanded and used to handle BRI rail routes (Kostecka-Tomaszewska & Czerewacz-Filipowicz, 2019, p. 478), and one of them is located approx. 50 kilometres north from the Terespol crossing. According to Ejdyś (2017, p. 185), some indicators have already attested to Podlaskie's potential and readiness to engage in the BRI, including numerous economic, educational and scientific factors. Whereas the voivodeship authorities draw attention to the investment and infrastructural potential of the region, pointing to access to important transport routes, the existing reloading capacity, the large offer of investment areas and the high quality of human resources (Podlaskie. Naturalna droga..., 2020). Also, it should be noted that no direct competition exists between different Polish regions in the context of the BRI because the growing demand for transshipments calls for a further supplement of the reloading capacity.

2. METHODOLOGY

The research part of this study is aimed at determining the position of individual voivodeships in the BRI in general and the position of the Podlaskie voivodeship in comparison to others in particular. For this purpose, the first stage of research designed

a set of 14 quantitative factors determining the position of the voivodeship in the project. The next step was conducting the survey in which a group of academic, business and local government experts determined the importance of said factors. The comparison of the factors helped to assess the voivodeships and rank them in terms of the achieved results in the third stage of the research. The last step was the analysis of the results achieved by individual voivodeships, which enabled identification of possible areas of intervention for the Podlaskie local government and recommendation of measures to be taken in these areas.

Three groups of factors considered in the first stage of the research were “state and administration”, “the business sector”, and “academia”. This classification was based on the triple helix model, developed in 1994 by Etzkowitz and Leydesdorff as a concept promoting the extension of the industry-government relationship to university-industry-government interaction. The triple helix model may be used to support the development of innovation and regional economic growth and to promote entrepreneurship by understanding the dynamics of interaction between the three institutional spheres (Cai & Etzkowitz, 2020, p. 8). The important role of universities in the creation of innovation in a knowledge-based society, and the overlapping of roles and functions held by the individual parties, are aspects of this model worth emphasising (Nazarko et al., 2013, p. 66). In terms of the research on the position of the

Polish voivodeships in the BRI, it was concluded that the triple helix model was an appropriate background for the specification of factors determining the level of involvement and potential of voivodeships, as the chance for a region to participate in the Initiative was possible only through the synergy of the three dimensions: local authorities, business and science (Nazarko et al., 2016, p. 5). The presented classification of factors is also consistent with the main dimensions for cooperation within the BRI, which are policy coordination, financial integration, facilities connectivity, unimpeded trade, and people-to-people bonds (Baker McKenzie, 2017, p. 2). The first two dimensions are omitted here as they are hardly influenced by local government units, but the other three are represented by consecutive groups of factors. The aspect of infrastructural connections is considered in group 1, “state and administration”, the dimension of undisturbed trade is addressed in group 2, “the business sector”, while the dimension of people-to-people exchange is represented by the factors in group 3, “academia”.

Table 1 lists a set of 14 quantitative factors. The first group includes aspects related to the infrastructural situation of the voivodeships as well as their geographical and geopolitical location. The factors in question referred to the transport and transshipment potential of voivodeships. For example, factor 3 refers to the reloading capacity of the voivodeship, illustrating a population that lives within 500 km of the voivodeship’s capital, which corresponds to the

Tab. 1. Factors describing the position of Polish voivodeships in the BRI

GROUP OF FACTORS	NO.	FACTOR	UNIT
State and administration	1	Density of rail network	km/100km ²
	2	Density of road network	km/100km ²
	3	Distributional coverage of the voivodeship	mIn people
	4	Access to wide gauge and border crossings	y/n
	5	The distance from seaports by rail	km
	6	The distance from seaports by road	km
The business sector	7	Number of intermodal terminals	num.
	8	Number of railway links with China	num.
	9	Number of Chinese companies in the voivodeship	num.
	10	Voivodeship’s tourism potential	km/km ² ; num/km ² ; % of area; num/km ²
Academia	11	Number of logistics studies graduates	num.
	12	Number of Confucius Institutes and Classes	num.
	13	Number of Chinese exchange students	num.
	14	Number of Sino-Polish research projects	num.

average range of a distribution centre considered to be international. Group 2 contains factors connected with conducting business activities related to the BRI. Issues related directly to logistics activities and to international cooperation at company and people levels were considered. Factor 10 refers to the human-to-human aspect of the BRI and expresses voivodeship's tourism potential, which was expressed using four indicators: the length of tourist routes, the presence of areas with exceptional natural values, the number of tourist accommodation facilities and the number of historical monuments. The last group of factors lists those related to scientific and research cooperation in the BRI context. This group includes both issues related to academic cooperation and exchange and issues related to qualifications and human resources in the context of international cooperation.

The second stage of research on the position of Polish voivodeships in the BRI was expert research. Using the CAWI (Computer Assisted Web Interview) method, a survey questionnaire was sent to 15 intentionally selected representatives of local administration, the private sector and the academic community. Respondents were asked to rate the importance of the listed factors using a 5-point scale, where a rating of one meant that the factor was considered "definitely not important" and five meant "definitely important". By using two questions in the respondent's metric, information was obtained about the respondent's place of work (a local government unit, private company or university) and the nature of their interest in BRI topics (professional, private or professional and private). Five experts from each of the abovementioned groups took part in the survey. Seven of them declared that they are interested in the BRI professionally (for example, by managing a business related to the handling of freight from China, conducting research on the BRI issue, organising BRI-related events), while eight respondents were interested in the BRI both professionally and privately (e.g., by following the news on the BRI in the media and literature or participating in conferences and events related to the BRI).

The third stage of the study involved the collection of quantitative data for individual voivodeships corresponding to the specified factors, as well as the normalisation of these data. In the case of factor 10, "Voivodeship's tourism potential", it was expressed using four indicators: the length of tourist routes, the presence of areas with exceptional natural values, the number of tourist accommodation facilities and the

number of historical monuments. The data representing these indicators for individual voivodeships were normalised, while the final value of the factor for a given voivodeship was presented as the average value of the normalised data. In the case of factor 11, "Number of logistics studies graduates", due to deficiencies in statistical data, values for two voivodeships were estimated. In the next step, the quantitative data collected for the voivodeships were normalised, as due to different ranges of data, it was necessary to bring them to a state of comparability. The normalisation procedure was performed using the classical unitisation formula, which was described in more detail by Jarocka (2015).

The fourth stage of the study included the determination of results achieved by individual voivodeships, considering the value of quantitative factors and their importance determined by experts. Comparison of these results made it possible to rank the voivodeships and determine the position of Podlaskie voivodeship.

3. RESEARCH RESULTS

The first relevant input that had to be considered was the importance of the factors identified by the experts. Table 2 presents the results of the factor importance assessment and selected statistical measures.

Considering the expert assessments, factors in group 1 are characterised by average importance of 3.64, where the most important was factor number 4, while the least important was factor number 5. The importance of the factors in the second group averaged 3.33. The experts assigned the highest importance in this group to factor number 7 and the lowest to factor number 10. For the factors in group 3, the average importance was 3, where factor number 14 was the most important and factor number 13 the least important. The importance ratings of all factors are quite homogeneous and characterised by low (less than 25 %) or average (25 %-45 %) variability. The lowest variability (17 %) is observed in the case of factor 7, the assessments of which deviate from the arithmetic mean by 0.72, which means that in its assessment, the experts were highly unanimous.

The second relevant input was quantitative data for individual voivodeships corresponding to the specified factors, collected from statistical yearbooks and Internet sources. The process of normalisation was used to bring the data to a consistent range from 0 to 1. Then, the results for individual voivodeships

Tab. 2. Importance of the factors

GROUP OF FACTORS	NO.	FACTOR	ARITHMETIC AVERAGE	STANDARD DEVIATION	COEFFICIENT OF VARIATION
State and administration	1	Density of rail network	3.73	0.88	24%
	2	Density of road network	3.87	1.06	27%
	3	Distributional coverage of the voivodeship	3.93	0.70	18%
	4	Access to wide gauge and border crossings	4.00	0.85	21%
	5	The distance from seaports by rail	3.07	0.88	29%
	6	The distance from seaports by road	3.27	0.96	29%
The business sector	7	Number of intermodal terminals	4.33	0.72	17%
	8	Number of railway links with China	3.60	1.06	29%
	9	Number of Chinese companies in the voivodeship	3.07	0.96	31%
	10	Voivodeship's tourism potential	2.33	0.98	42%
Academia	11	Number of logistics studies graduates	3.33	0.90	27%
	12	Number of Confucius Institutes and Classes	2.80	1.01	36%
	13	Number of Chinese exchange students	2.47	0.74	30%
	14	Number of Sino-Polish research projects	3.40	0.74	22%

were calculated as a sum of the quotients of the factor importance and the data corresponding to this factor. Table 3 presents the results of the final calculation.

In the classification of positions in the BRI, Podlaskie was placed in the second half of the set, 11th among 16 Polish voivodeships. Certainly, this is a result that gives room for further work and improvement. To determine which areas represented in the study are potential places of intervention, a further analysis was conducted, including comparing the results of Podlaskie with the average results for the whole country, with the results of the three leaders of the classification, as well as with the results of the voivodeships located in the east of Poland (Fig. 1).

Podlaskie achieved relatively good results in comparison with average results (a), which is indicated by the fact that only in the case of factor 3 the result achieved by Podlaskie is significantly below the average. As far as other factors are concerned, Podlaskie scored above average for factors 4 and 12, close to average for factors 6 and 7, and slightly below average for the remaining 9. In comparison with the leaders of the voivodeship classification (b), Podlaskie achieves a better result only in the case of factor 4. In the case of the remaining factors, strong domination of the leaders is visible. It is worth noting that of these three provinces, one is a capital region, one is located in the industrial and mining basin of the country, and

Tab. 3. Classification of voivodeships according to their position in the BRI

RANKING	VOIVODESHIP	RESULT	RANKING	VOIVODESHIP	RESULT
1	Mazowieckie	28.33	9	Kujawsko-Pomorskie	12.71
2	Śląskie	28.16	10	Warmińsko-Mazurskie	11.58
3	Pomorskie	21.19	11	Podlaskie	11.42
4	Wielkopolskie	21.02	12	Lubuskie	10.17
5	Dolnośląskie	18.37	13	Opolskie	9.62
6	Łódzkie	18.69	14	Świętokrzyskie	9.43
7	Małopolskie	17.56	15	Podkarpackie	7.28
8	Lubelskie	12.90	16	Zachodniopomorskie	7.03

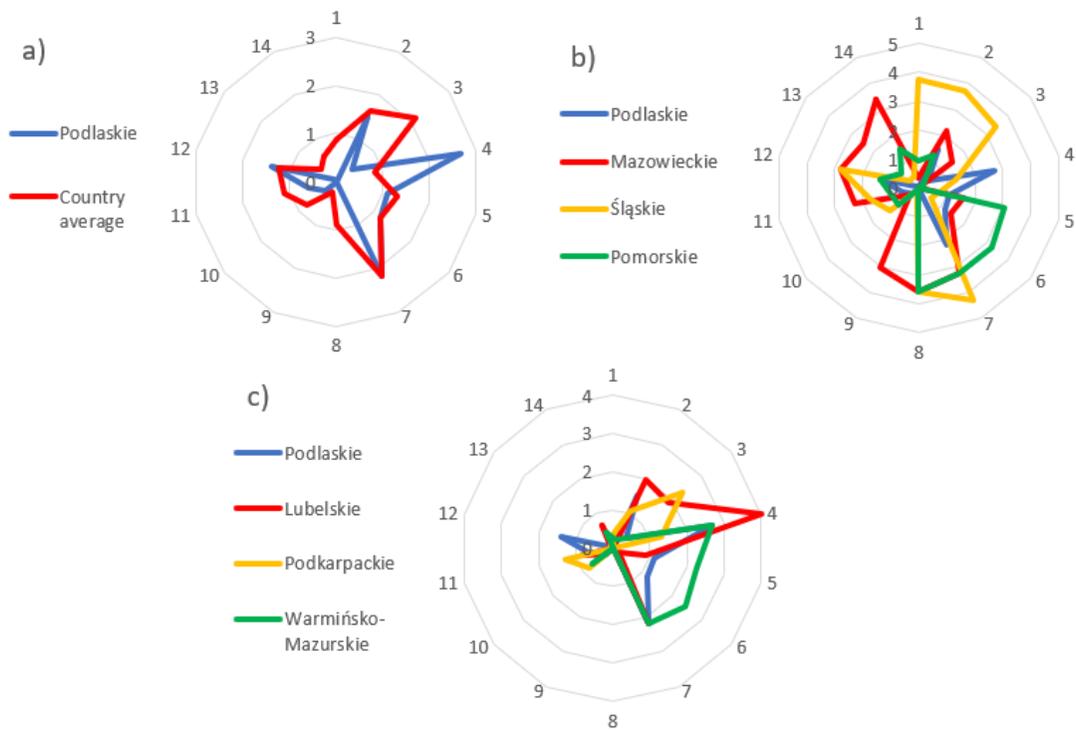


Fig. 1. Results of Podlaskie voivodeship compared to a) average results, b) best results, c) results for Eastern Poland

one is a maritime region with the largest seaport in the country. In comparison with other voivodeships located in Eastern Poland (c), Podlaskie achieves similar results, being the leader in the case of factor 12 and reaching similar results in the case of several others.

The presented analysis certainly does not fully cover the possibility of comparing the results achieved by the Podlaskie voivodeship in the BRI with the results achieved by other Polish voivodeships. However, it provides a relatively comprehensive compari-

son. The analysis carried out so far allows identifying the current state of affairs and drawing general conclusions but identifying particular fields for strengthening Podlaskie’s position in the BRI and defining more detailed recommendations for improvement requires further consideration. Table 4 presents the results achieved by Podlaskie voivodeship in the case of particular factors, compared with their importance and with three subsequent benchmark levels: average results for Eastern Poland, the whole country and the leaders of the list. Four factors were omitted because

Tab. 4. Classification of possible intervention areas

NO.	FACTOR	IMPOR-TANCE	POD-LASKIE	EASTERN POLAND	AVERAGE FOR COUNTRY	BEST RESULTS
1	Density of rail network	3.73	0.00	0.16	0.87	3.73
8	Number of railway links with China	3.60	0.00	0.00	0.90	3.60
14	Number of Sino-Polish research projects	3.40	0.00	0.27	0.59	3.40
11	Number of logistics studies graduates	3.33	0.60	0.67	1.11	3.33
9	Number of Chinese companies in the voivodeship	3.07	0.00	0.00	0.22	3.07
10	Voivodeship’s tourism potential	2.33	0.28	0.50	0.78	2.12
2	Density of road network	3.87	1.51	1.20	1.65	3.87
13	Number of Chinese exchange students	2.47	0.07	0.06	0.41	2.47
7	Number of intermodal terminals	4.33	2.17	1.62	2.17	4.33
12	Number of Confucius Institutes and Classes	2.80	1.40	0.35	1.23	2.80

their level for a given voivodeship results from permanent conditions and is not subject to improvement. The remaining ten factors could represent potential areas of intervention for local government in synergy with the private sector and academia. As for the method to determine the priority of these potential areas of improvement, it assumes a three-stage approach. Firstly, attention should be brought to matters in which Podlaskie achieves results below the average of eastern voivodeships. Upon achieving the improvement there, the next step would be to include factors in the case of which Podlaskie's result is lower than the average result of the country. Last but not least, there are two areas in which Podlaskie's result is lower than the maximum and can be improved. Within these three stages of action, the factors were ranked in order of their importance determined in the expert study.

4. DISCUSSION OF THE RESULTS

The selected and prioritised areas of intervention provide a background for planning and recommending specific actions that can be taken to improve Podlaskie's position in the context of the Belt and Road Initiative. For the purposes of this study, recommendations for actions will be presented in relation to the local government. However, these will certainly not be actions whose implementation will be influenced solely by the selected stakeholder. According to the aforementioned triple helix model, regional development and economic growth are conditioned by the dynamics of interaction between three institutional spheres (government, industry and academia). An important element of this model is the overlapping of roles held by the different parties, so the recommended actions will consider cooperation between all parties, which will certainly constitute a key aspect of achieving positive results of the introduced changes.

The mission of the local government is to perform tasks that are not reserved by law to the central administration. The basic tasks of the voivodeship's local government include, but are not limited to, creating conditions for economic development, promoting the advantages and development opportunities, supporting the development of science, and maintaining and developing infrastructure important to the voivodeship (Ustawa z dnia 5 czerwca..., 1998). The local government has a certain degree of independence, manages the voivodeship's property and

budget, and has the possibility to obtain EU funds. However, as an authoritative entity, it must manage financial resources transparently, using long-term plans. Therefore, the proposed recommendations must be compatible with already planned activities. The Development Strategy for Podlaskie Voivodeship 2030 (hereinafter — the Strategy) can be a determinant of the long-term objectives of the voivodeship. It considers various perspectives of the region's development: economic, human capital and international partnership (Strategia..., 2020).

The areas of intervention represented by factors 1, 2 and 7 concern the infrastructural sphere and describe the voivodeship's connectivity and logistical attractiveness. Strategic plans concerning the development of transport infrastructure are included under the operational goal 2.3 of the Strategy, entitled "High-quality space". The logistics potential of the voivodeship is represented by its location at the intersection of important international transport routes and the functioning of three modern intermodal terminals with a total capacity of 300 000 TEU. However, to fully utilise this potential, it is necessary to develop the infrastructure network in the voivodeship by building new and modernising existing railway and road routes, which is necessary due to the relatively low density of the railway (lower than the average on the eastern wall) and road network (lower than the national average). Local governments can obtain funds for these purposes from EU programmes, such as Infrastructure and Environment, or government programmes, such as the Government Road Development Fund. Local governments should also promote the use of border crossings on the border with Belarus. Two out of four border crossings operating in the region are already operational to a limited extent, but their reloading potential is much greater, and the operation of the remaining two crossings is hindered by administrative and infrastructural problems, which the local government could certainly help to solve.

The areas of intervention represented by factors 8 and 9 concern the business sphere of international cooperation with China and describe the business and investment attractiveness of the voivodeship. Strategic activities related to this area are included in the Strategy under the operational goal 3.3, entitled "International and trans-regional partnerships". Breaking the stereotype of the low investment attractiveness of Podlaskie will require building an attractive offer directed to investors. To increase the business attractiveness of the voivodeship and to

attract Chinese investors and exporters to the region, it is important to use the existing resources (geographical location, strong scientific background, development potential) and to create new opportunities through cooperation with other regions of the country and the EU. A developing region, open to innovation, with skilled workers, a strong logistics base and developed infrastructure, can become an attractive place for foreign investors. It is necessary to support initiatives that contribute to the positive image of the region in terms of innovation (such as the Białystok Science and Technology Park). The local government may support industries that constitute smart specialisations of the region, i.e., competences of the region that may contribute to its transformation and restructuring (Strategia..., 2020, p. 64), which in the case of Podlaskie include the agri-food sector or the metal and machinery industry. Supporting these key industries for the development of the region (e.g., through assistance in obtaining subsidies or joint implementation of promotional campaigns) may strengthen their export potential and attract Chinese interest both in terms of investing in the region and importing regional products.

The areas of intervention represented by factors 14, 11 and 12 concern the scientific sphere and describe the voivodeship's attractiveness in terms of teaching and research. Strategic activities related to this area are included in the Strategy under the operational goals 1.2 and 2.1, entitled "System of open innovation" and "Competent inhabitants". The goal defined by the local authorities is to develop a model of dynamic national and international cooperation between universities and scientific centres, which would foster a high level of education and research and benefit the region's economy. This can be achieved by increasing the activity of local universities in international projects and competitions (such as SHENGL or Polish–Chinese bilateral competitions), and by matching the undertaken projects with the needs of industry and searching for new directions of the voivodeship development, such as nanotechnology (Nazarko et al., 2013).

The activities of the local government in supporting the development of the region in this aspect could include support in obtaining funding for the development of scientific and research centres and for increasing the competences of students through internships and international cooperation. Such cooperation with China is already underway, e.g., the Summer School of Logistics in China or the functioning of the Confucian Class at the Białystok University

of Technology, but there are certainly many more opportunities.

The areas of intervention represented by factors 10 and 13 concern the area of attractiveness and image of the region and describe the general interest of Chinese tourists and students in the voivodeship. Strategic actions related to this area are included in the Strategy under operational objective 3.4, "Hospitable region". Local authorities, through promotional activities, build a brand of the region as a comfortable and clean place, attractive both for settlement and recreation, with a high potential of human resources and innovation, but also attractive and culturally diverse, safe and clean (Podlaskie. Naturalna droga..., 2020). However, promotional activities must also be supported by some operational measures. Local government support in this area should cover all the spheres mentioned so far: infrastructure, international business cooperation and science. Institutional, organisational, and financial support for all initiatives aimed at making Podlaskie voivodeship an attractive place to study (e.g., through assistance provided to universities in financing foreign exchange programmes for Chinese students and researchers), work, or visit, combined with promotional activities, can certainly strengthen both the position and image of the Podlaskie voivodeship in the Belt and Road Initiative.

CONCLUSIONS

Studying the position of Polish regions in the Belt and Road Initiative proved to be a relatively difficult research challenge. In the context of a project of such global influence, it may seem more natural to compare the positions of individual countries in it. However, in the case of comparing individual regions of a member country, setting up the criteria for comparison proved to be a challenge (especially specifying factors that would both be characteristic for the regions and actually describe aspects that influence the region's position in the international project).

In the case of an international project like the BRI, where the main strategic decisions are made at the governmental level, it is impossible to consider the participation of the regions of the member states in the project without considering the participation of the whole country. In the case of Poland, the government's actions and approach to the BRI have been so far characterised by moderate optimism and keeping distance from deeper involvement, making it dif-

difficult for individual voivodeships to actively join the project and increase their participation and importance. The current organisational, legislative, tax and customs conditions related to the handling of imported goods in Poland make their clearance, control and reloading relatively difficult on the territory of Poland compared to Western European countries. Polish entrepreneurs undertake individual and collective actions to adjust the existing regulations to good western practices. However, the insufficiency of political will at the national level makes such actions challenging.

The authors are aware of the non-representative and fragmentary nature of the study. Therefore, the developed set of recommendations that the local government can undertake in selected areas does not constitute a definitive list. However, these actions have a chance to bring the expected results if they are combined with the development of consistent objectives and plans at the level of central and local government, the private sector and the academic community, and with mutual support for each other's activities. Openness to international cooperation and the opportunities that the Belt and Road Initiative brings for businesses and the country are crucial in this respect. Only if these opportunities are recognised in time will Poland be able to realise its potential to participate in this project and see the benefits of such participation.

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Appendix 1. Figures for voivodeships before normalisation

FACTOR NUMBER	UNIT OF MEASUREMENT	VOIVODESHIP															
		DOLNOŚLĄSKIE	KUJAWSKO-POMORSKIE	LUBELSKIE	LUBUSKIE	ŁÓDZKIE	MAŁOPOLSKIE	MAZOWIECKIE	OPOLSKIE	PODKARPACKIE	PODLASKIE	POMORSKIE	ŚLĄSKIE	ŚWIĘTOKRZYSKIE	WARMIŃSKO-MAZURSKIE	WIELKOPOLSKIE	ZACHODNIOPOMORSKIE
1	km/100km ²	8.8	6.7	3.6	6.5	5.9	6.7	4.8	8.3	4.8	3.6	6.6	15.8	5.1	4.4	6.3	5.1
2	km/100km ²	123.1	155.9	148.1	111.9	142.9	208.8	154.5	110.1	119.6	132.8	124.6	203.9	150.7	91.7	137.9	84.7
3	mln people	93.5	74.1	75.6	98.1	83.6	86.1	70.6	93.8	80.2	59.5	57.4	92.6	82.7	59.3	86.4	54.7
4	y/n	0	0	3	0	0	0	0	0	1	2	0	1	1	2	0	0
5	km	456	162	498	446	370	608	335	533	705	449	0	539	523	180	309	364
6	km	493	178	600	464	348	592	359	549	637	407	0	531	480	167	321	363
7	num.	3	0	2	1	4	2	3	0	0	2	3	4	0	2	4	2
8	num.	0	0	0	0	1	0	1	0	0	0	1	1	0	0	0	0
9	num.	70	14	18	33	33	55	2570	11	18	17	40	125	11	14	119	24
10	km/km ²	34.5	32.7	16.8	45.4	14.1	57.5	18.2	16.3	13	21.7	17.9	52.3	24.9	11.7	16.9	34.3
	num/km ²	5.2	2.3	1.9	2.2	1.8	10.2	1.8	1.8	3.7	1.4	9	5.7	2.1	2.2	2.3	7
	% of area	18.6	32.2	22.7	37.4	19.5	53	29.7	27.6	44.9	31.6	32.8	22.1	64.9	46.7	29.6	21.8
	num/km ²	44	20	17	33	16	41	22	36	29	12	20	35	16	27	27	19
11	num.	2321	698	1024	339	2147	750	2829	547	1541	746	1216	2132	693	0	4081	800
12	num.	2	1	0	0	0	2	2	1	0	1	1	2	0	0	2	0
13	num.	87	101	15	0	111	100	521	43	21	14	161	81	10	0	115	7
14	num.	5	0	3	0	1	5	16	0	0	0	7	2	0	2	3	0

Appendix 2. Figures for voivodeships after normalisation

FACTOR NUMBER	VOIVODESHIP															
	DOLNOŚLĄSKIE	KUJAWSKO-POMORSKIE	LUBELSKIE	LUBUSKIE	ŁÓDZKIE	MAŁOPOLSKIE	MAZOWIECKIE	OPOLSKIE	PODKARPACKIE	PODLASKIE	POMORSKIE	ŚLĄSKIE	ŚWIĘTOKRZYSKIE	WARMIŃSKO-MAZURSKIE	WIELKOPOLSKIE	ZACHODNIOPOMORSKIE
1	0.43	0.25	0.00	0.24	0.19	0.25	0.10	0.39	0.10	0.00	0.25	1.00	0.12	0.07	0.22	0.12
2	0.31	0.57	0.51	0.22	0.47	1.00	0.56	0.20	0.28	0.39	0.32	0.96	0.53	0.06	0.43	0.00
3	0.89	0.45	0.48	1.00	0.67	0.72	0.37	0.90	0.59	0.11	0.06	0.87	0.65	0.11	0.73	0.00
4	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.33	0.67	0.00	0.33	0.33	0.67	0.00	0.00
5	0.35	0.77	0.29	0.37	0.48	0.14	0.52	0.24	0.00	0.36	1.00	0.24	0.26	0.74	0.56	0.48
6	0.23	0.72	0.06	0.27	0.45	0.07	0.44	0.14	0.00	0.36	1.00	0.17	0.25	0.74	0.50	0.43
7	0.75	0.00	0.5	0.25	1.00	0.50	0.75	0.00	0.00	0.50	0.75	1.00	0.00	0.50	1.00	0.50
8	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00
9	0.02	0.00	0.00	0.01	0.01	0.02	1.00	0.00	0.00	0.00	0.01	0.04	0.00	0.00	0.04	0.01
10	0.48	0.28	0.10	0.47	0.06	0.91	0.18	0.27	0.35	0.12	0.39	0.54	0.37	0.29	0.23	0.35
11	0.57	0.17	0.25	0.08	0.53	0.18	0.69	0.13	0.38	0.18	0.30	0.52	0.16	0.00	1.00	0.20
12	1.00	0.50	0.00	0.00	0.00	1.00	1.00	0.50	0.00	0.50	0.50	1.00	0.00	0.00	1.00	0.00
13	0.17	0.19	0.03	0.00	0.21	0.19	1.00	0.08	0.04	0.03	0.31	0.16	0.02	0.00	0.22	0.01
14	0.31	0.00	0.19	0.00	0.06	0.31	1.00	0.00	0.00	0.00	0.44	0.13	0.00	0.13	0.19	0.00

Appendix 3. Sources of data for particular quantitative factors

No.	FACTOR	SOURCE
1	Density of rail network	https://utk.gov.pl
2	Density of road network	https://stat.gov.pl
3	Distributional coverage of the voivodeship	https://www.osw.waw.pl
4	Access to wide gauge and border crossings	https://www.freemaptools.com
5	The distance from seaports by rail	https://www.pkpcargo.com
6	The distance from seaports by road	https://www.google.com/maps
7	Number of intermodal terminals	https://stat.gov.pl
8	Number of railway links with China	https://www.shiphub.pl
9	Number of Chinese companies in the voivodeship	https://www.coig.com.pl
10	Voivodeship's tourism potential	https://stat.gov.pl ; https://bdl.stat.gov.pl
11	Number of logistics studies graduates	https://stat.gov.pl
12	Number of Confucius Institutes and Classes	https://www.digmandarin.com
13	Number of Chinese exchange students	https://radon.nauka.gov.pl
14	Number of Sino-Polish research projects	https://www.ncn.gov.pl ; https://archiwum.ncbr.gov.pl