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OUTCOMES OF CROSS-BORDER COOPERATION: INFRASTRUCTURE DEVELOPMENT ASPECT *

Cross-border cooperation through the prism of regional cooperation between Belarusian, Polish and Ukrainian border regions is described in this paper. Projects of cross-border infrastructure development which are considered regional-specific for each of the abovementioned country are analyzed. Types of further cross-border infrastructure development improving trade logistics and trade facilitation efficiency at the border crossings are proposed.
Keywords: *cross-border cooperation; border infrastructure; Ukraine; Poland; Belarus.*

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ЕФЕКТИ ТРАНСКОРДОННОГО СПІВРОБІТНИЦТВА: АСПЕКТ ІНФРАСТРУКТУРНОГО РОЗВИТКУ

У статті розглянуто транскордонну співпрацю через призму регіонального співробітництва між прикордонними регіонами Білорусі, Польщі та України. Проаналізовано проекти розвитку транскордонної інфраструктури, які враховують регіональну специфіку кожної із зазначених країн. Запропоновано шляхи подальшого розвитку транскордонної інфраструктури щодо поліпшення торговельної логістики та спрощення процедур торгівлі і ефективності пунктів пропуску.
Ключові слова: *транскордонне співробітництво; прикордонна інфраструктура; Україна; Польща; Білорусь.*
Рис. 1. Табл. 3. Літ. 11.

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ЭФФЕКТЫ ТРАНСГРАНИЧНОГО СОТРУДНИЧЕСТВА: АСПЕКТ ИНФРАСТРУКТУРНОГО РАЗВИТИЯ

В статье рассмотрено трансграничное сотрудничество через призму регионального сотрудничества между приграничными регионами Беларуси, Польши и Украины. Проанализированы проекты развития трансграничной инфраструктуры, учитывающие региональную специфику каждой из указанных стран. Предложены пути дальнейшего развития трансграничной инфраструктуры по улучшению торговой логистики, упрощению процедур торговли и эффективности пунктов пропуска.
Ключевые слова: *трансграничное сотрудничество; приграничная инфраструктура; Украина; Польша; Беларусь.*

Introduction. In today's world, cross-border cooperation is an integral part of new potential opportunities to increase foreign economic activity in border regions of different countries. Improper use of the potential for cross-border cooperation and non-compliance of infrastructure development with the needs of border regions create the need to study the possibility of joint development and use of infrastructure, and finding ways to ensure better infrastructure in border regions. All of this, in terms of intensification of cross-border regional cooperation, becomes significant.

Considering the importance of infrastructure integration between border regions in a single space within European regions, attention should be paid to the develop-

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ment of common infrastructure that will serve as an important tool which can bring order to chaotic relations between border regions and deepen cross-border cooperation, also promoting socioeconomic development of border regions. The presence of integration links between crossborder regions forms the basis for infrastructure provision between such regions and, given the specialization of each region, determines the need for joint development of cross-border infrastructure.

Latest research and publications analysis. The issue of cross-border infrastructure influence and the benefits from its development were researched by such scholars as C. Edmonds and M. Fujimura (2006), M. Fujimura and R. Adhikari (2010), G. Povh (2011), D. Puga (2008), P. Srinivasan (2012), P. Warr, J. Menon and A. Yusuf (2009). It should be noted that currently, issues related to a number of problems of cross-border infrastructure and to the importance of providing cross-border infrastructure to enhance cross-border cooperation in particular, and also issues concerning infrastructure role in cross-border cooperation are not sufficiently explored. Therefore, the aspect of cross-border infrastructure development requires further research.

The main goal of this article is to analyze the development of cross-border infrastructure on Polish-Belarusian and Polish-Ukrainian borders, in particular, the methods of developing cross-border infrastructure, selected for cross-border cooperation projects to meet the demands of border regions in Poland, Ukraine and Belarus.

Table 1. **Border crossings infrastructure development projects implemented under the CBC Programme Poland-Belarus-Ukraine in 2007–2013**
(www.pl-by-ua.eu)

No.	Name of the Project	Country of Lead partner	Total budget, EUR
P 1	Development of Border Guard Sections Infrastructure	Ukraine	8,842,447.87
P 2	Infrastructural development of the Polowce – Pieszczatka road border crossing (Polish-Belarusian border)	Poland	4,933,213.43
P 3	Construction of road border crossing at Dolhobyczow	Poland	5,549,542.01
P 4	Construction of the exit as part of road construction to the border crossing Budomierz – Hruszew	Poland	5,764,688.76
P 5	Construction and instrumentation of the road border checkpoint "Peschatka"	Belarus	12,111,111.11
P 6	Reconstruction of the international automobile border crossing point (IABCR) "Ustylug"	Ukraine	5,487,022.59
P 7	Creation of the functional module "Border crossing point filter" in the international automobile border crossing point (IABCP) "Rava-Ruska", providing equipment and facilities for the border crossing points "Krakivets", "Shegini" and "Yagodyn"	Ukraine	2,213,731.87
P 8	Construction of relocatable X-ray scanning control system for vehicles on the road checkpoint "Bruzgi"	Belarus,	2,722,222.22
P 9	Development of IT infrastructure of Ukrainian Customs and Border Guards Services at Ukrainian – Polish Border	Ukraine	2,719,382.00
P 10	"Together for safety of Lubelskie Voivodeship and Volyn district"	Poland	4,324,803.00
	Total		**54,668,164.86**

The research for this paper was done independently by the authors. Infrastructure projects (listed in Table 1) realised at borders of Ukraine and Poland

and Belarus and Poland were analyzed in this paper. For the sake of objectivity and impartiality the materials used either from cited literature or from documents provided by the administration of the Programme or from the interviews with the representatives of the abovementioned projects or received from the statistical database available online.

Key research findings. Geographical location of the cross-border region within the Programme determined its role as a transit road area: it is at the crossroads of major transport routes linking Western and Eastern Europe, and also Black Sea regions with Baltic Sea countries.

Infrastructure of the border region can be divided into the following types (Kalnitska, 2010):

- ***transport infrastructure*** of international and national levels;
- ***border trade infrastructure*** supporting trade the border areas;
- ***border security infrastructure*** needed for border agencies for efficient coordination of preventive and operational measures to combat illegal immigration, for making decisions on the acquisition or termination of Ukrainian citizenship, for registration of individuals, for provision of documents to enter or exit the country, and for monitoring the compliance with rules of the passport system;
- ***customs infrastructure*** – the core infrastructure in a border region.

Border infrastructure could not be analysed without detailed evaluation of transport infrastructure within cross-border area. Transport path greatly depends on the availability of this territory, which contributes to competitiveness in terms of its ability to attract investment and exports.

A number of international transport corridors pass through the cross-border region under srudy:

1. Pan-European Transport Corridor II (East – West) Berlin – Poznan – Warsaw – Brest – Minsk – Smolensk – Moscow – Nizhny Novgorod. This transport corridor is defined by the EU as the top priority trans-European transport corridor, taking into account the importance of trade flows between the East and the West.

2. Pan-European Transport Corridor III, with the route Berlin – Wroclaw – Lviv – Kyiv, the length of 1640 km.

3. Pan-European Transport Corridor V, which links Trieste and Lviv via Ljubljana, Budapest and Uzhhorod with the total length of 1595 km.

4. Gdansk – Odesa International Transport Corridor, with the length of 1816 km through Poland and Ukraine.

One of the key elements in transport infrastructure, in the context of international contacts, is the network of border crossing points, and their logistics infrastructure.

Within the analysed area, there are 11 border crossing points between Poland and Belarus, as well as 12 points between Poland and Ukraine. The general indicators of transportation infrastructure within Polish, Ukrainian and Belarusian borders could be characterised by the following data (Table 2).

Today, Polish-Ukrainian border has 12 cross-boundary points, including 8 road and 5 rail points (dpsu.gov.ua/en/map.htm). Half of them are located in Podkarpackie Voivodeship (Poland), 3 automobiles: Korchova, Medyka and Kroscenko and 3 railway ones: Pshemushl, Kroscenko and Verkhrata.

Table 2. **Trans-border transportation infrastructure at the borders of Poland, 2014,** *own research and* (Borko, 2003)

Border to	Length of border, km	Number of hard roads	Part of border on hard road	Number of road border-crossing checkpoints	Number of border-crossing railways
Belarus	407.47	14	29.1	7	4
Ukraine	526.23	11	47.8	8	5

Podkarpackie border crossing points, including the Lviv region, are characterised by the largest growing dynamics of border traffic. In 2011, the 3 largest border crossings "Carpathians region – Lviv" – Korcheva, Medika and Korostenko sent more than 10 mln vehicles (Shcherba, 2014).

Border crossing Korchova-Krakovets (automotive) is a day-and-night passenger and cargo border crossing on the border with Ukraine. It is the only Podkarpackie Voivodeship border crossing on the border with Ukraine, having full range of control: sanitary, phytosanitary and veterinary.

In the whole region, in 2012, the highest number of border crossings was in Korchova – Medyka – Przemyshl in Podkarpackie Voivodeship (7.3 mln people) located on the important international highway E-40. At the same time 4 points, located in Lublin Voivodeship (Kukuryki-Terespol, Dorohusk, Zosin and Hrebenne) serviced together 38.5% of the total boundary traffic on the Eastern border of Poland, which put Lubelskie Voivodeship first among other regions in the Programme.

In general, border infrastructure is developing and this can be illustrated by the following information (Table 3).

Table 3. **Characteristics of cross-border infrastructure**

Indicators	Poland-Belarus border		Poland-Ukraine border	
	2003	2012	2003	2012
Crossing the border by indiv. persons, ths	4,958.1	4,255.2	4,838.4	6,448.3
Including foreigners, %	92.0	87.7	83.5	81.4
The average number of persons to be processed on 1 border crossing point, ths people	1,239.5	1,063.8	806.4	1,289.7

Source: Strategy of cross-border cooperation of Lublin region, Lviv, Volyn and Brest regions for 2014–2020.

However, the number of border crossings and the quality of cross-border infrastructure is insufficient; in particular, taking into consideration the growing traffic at borders, this factor hinders the development of cross-border cooperation, as well as cross-border socioeconomic relations.

Cross-border crossing points must be improved due to highly growing economic relations between Poland, Ukraine and Belarus.

Taking into consideration the opinions of Polish, Ukrainian, Belarus experts and our own research, we can formulate the key problems of cross-border crossings:

1. Insufficient capacity of border crossings on international transit roads is an extremely sensitive problem, as well as the absence of small border checkpoints, including checkpoints for pedestrians, which can serve local border traffic. Therefore, it is needed to develop the existing crossings and create new crossings.

2. General weakness of transport infrastructure. The most important restrictions include: relatively rare road network, lack of motorways and express roads, poor quality of roads which not adapted to such intensity, poor condition of road surface.

3. Essential underinvestment of airports in the region (Lublin, Rzeszow, Lviv, Brest). It is necessary to modernise the Brest Airport and to open Lutsk Airport. The main problem to be solved for air transport development is to convince carriers to open new lines with the use of these airports in the analysed territory. Additionally, it would be necessary to develop infrastructure for air cargo.

One of the main approaches to solving the abovementioned problems was realization of the projects targeted at border crossings infrastructure development implemented within the Cross-border Cooperation Programme Poland-Belarus-Ukraine 2007–2013. During the detailed analysis of the projects financed within this Programme, main border crossings infrastructure development projects were selected (Table 1). Approximate funds allocation among partners under these infrastructure projects can be described by the following graph (Figure 1).

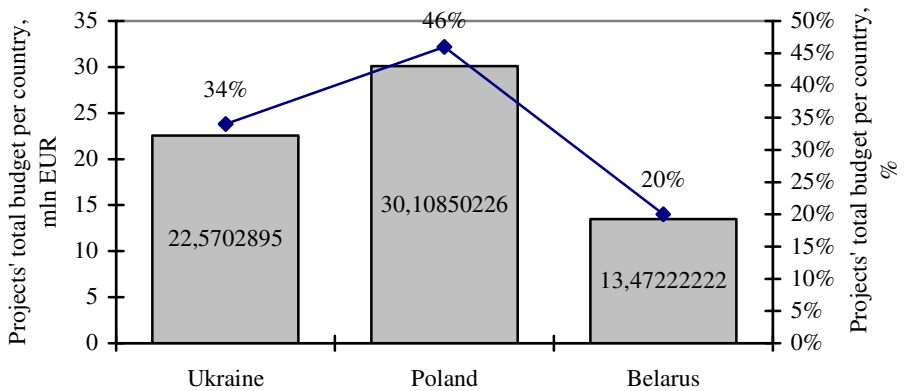

Figure 1. **Funds allocation between the countries,** *authors' construction*

The analysed projects were focused on the following four main elements requiring improvements: *roads, buildings, equipment and trainings*. As a consequence, for efficient and secure borders, through the framework of the CBC Programme, such results are obtained:

- More efficient and effective customs clearance procedures.
- More effective border guarding.
- Enhanced cooperation between the services of the countries.
- Increased contacts and cooperation between border-zone communities.
- Decreased rate of border-zone crimes.
- Detecting document falsification.
- Detecting stolen vehicles.
- Preventing smuggling and illegal migration.
- Smooth control of procedures at BCP.
- Improved social conditions for all users of BCP.
- Improved working conditions.
- Increased volumes of international passenger and goods transportation.
- Implemented latest control standards.

Hence, partially such results are related to trade logistics, trade facilitation and efficiency at border crossings.

In general, benefits from the analysed infrastructure projects implementation can be grouped as follows:

1. ***Reduced Travel Time and Transport Cost.*** An immediate outcome of developing cross-border transport infrastructure is reduction of travel time and transport costs. This is very true in the case of Poland-Ukraine and Poland-Belarus borders. Waiting time between Ukraine and the EU is the longest of all other border crossing points. The average waiting time at Poland's border crossing points ranges from almost 6 hours in Medyka to almost 5 hours in Zosin.

As a result of the projects, this problem will be mostly solved. For example, due to P 3 project realisation, it is expected that the average waiting time will be reduced by 35% in Korczowa, 25% in Medyka and 10% in Kroscienko.

2. ***Increased Traffic.*** Reduced transport costs generate increased traffic. For instance, in the project P 2 the infrastructure for goods and pedestrians and passengers control will have daily throughput in both directions: 200 trucks up to 7.5 t; 2000 car; 50 buses. Works under project P3 significantly increase border crossing capacity for vehicles – now it is 5000 vehicles per day. Moreover, new road border crossing in Budomierz handles approximately 8000 people, 3000 passenger cars, and 80 buses.

3. ***Expanded Trade.*** Increased traffic is explained by the expansion of regional trade due to reduced transport costs, implementation of new techniques and better skills of guard services.

4. ***Induced Investments.*** Improved cross-border transport infrastructure induces investments into new economic activities.

5. ***Enhanced Tourism.*** Part of increased traffic volume is related to increased number of visitors and tourists.

6. ***Increased Income and Improved Living Standards for Households.*** There is evidence on increased income and improved living standards for households under the influence of cross-border transport infrastructure projects.

7. ***Growth in Border Cities and Towns: Agglomeration Effects.*** As the movement of goods and people across borders becomes easier, the diversity of resource endowments among neighbouring countries tends to magnify the agglomeration effects, entrepreneurs exploit new opportunities and combine resources with varying competitive advantages across borders. While it is still too early to detect the extent of agglomeration effects attributable to these specific projects, one can still associate noticeable developments at border areas at least partly with the progress in cross-border infrastructure, both physical one and the accompanying institutional and regulatory arrangements.

However, Polish, Belarusian and Ukrainian experts agree that low communication availability of cross-border regions and operation on its territory of two segments of external borders of the European Union are the main obstacles to the development of this region.

The external border of the EU, which is a spatial barrier with low permeability, both in its physical and technical aspects (border crossings), as well as in formal legal one (visa), creates one of the most important obstacles to cross-border cooperation.

Development of border guard units' infrastructure and using advanced border guard equipment will create equal opportunities for border guarding on both sides of Polish-Ukrainian and Polish-Belarusian borders. It will allow conducting joint planning, meetings, patrolling and operation with the same level of efficiency on both sides of the border.

This will enhance the effectiveness of border protection and partially prevent transborder crimes. Border staff will be able to carry out professional duties properly; we can also expect increased capacity in detection and prevention of smuggling, trafficking, illegal migration and other offences of cross-border character.

Thus, cross-border crimes prevention will have a great impact on the local inhabitants' way of living, as it will influence the economic growth of this region, the level of trade and produce turnover, development of the services sector, as well as decrease the criminal situation. Therefore, enhancement of border security will guarantee more safety for local inhabitants on both sides of the border.

To improve the situation in this area, the following activities should be implemented:

- improving the permeability of Polish-Belarusian and Polish-Ukrainian border by opening new border crossings points, including walking and tourist routes,
- improving road access to border crossings points,
- extension of the zone of small border traffic,
- revitalization of cross-border rail infrastructure,
- support for airports in terms of new directions opening, including cross-border routes.

Conclusions and recommendations. Border regions are active zones, which play important roles in the convergence of national and global economy, since they are on the verge of national and global economic space.

Vast majority of research on the linkage between the development of infrastructure and growth, support and confirm the idea that infrastructure development has positive effects on growth and, in particular, on trade.

In this paper we describe cross-border cooperation through the prism of regional cooperation between Belarusian, Polish and Ukrainian border regions, and for that reason we analysed 10 projects of cross-border infrastructure development which are considered regional-specific for each of the mentioned country. Although the analysed projects fully satisfy the current demands of the border regions and their inhabitants, the demands of lime, new approaches, new experience and practice are bringing constantly novel or modernised solutions and innovative technologies for solving emerging problems. That is why long-term modernisation should be kept in mind with the intention of forming new types and formats of cross-border regional cooperation.

Cross-border infrastructure can help realise the full potential of trade only if there are complementary improvements in *trade logistics* and *trade facilitation* and *efficiency at border crossings*. That is why the mentioned aspects should be among the priorities of further cross-border cooperation in the regions under our observation. In this context, it has to be underlined that programmes of regional cross-border cooperation such as Poland-Belarus-Ukraine 2007–2013 are a very important tool for realising cross-border infrastructure development.

Types of further cross-border infrastructure development related to trade logistics. Modernisation of infrastructure of national and international importance can be solved by establishing *international logistics systems and creating logistics centres*. Significant transit potential of border regions in Poland, Ukraine and Belarus requires coordinated efforts for managing free movement of goods, capital, labour and infrastructure itself. The priority development of terminal warehouses in the border regions of Poland, Ukraine and Belarus can become a catalyst for border trade recovery, and can attract additional traffic volumes and thus increase the export potential of industrial enterprises. Further cooperation should concern creating trade and logistics centres as a tool for effective use of geographical potential of the border areas.

Types of further cross-border infrastructure development related to trade facilitation. Today, it is not enough to focus on the reconstruction and new equipment of border infrastructure. New technologies and innovative approaches for successful and effective implementation of control procedures at the border (*electronic environment, electronic control, paperless technologies, introduction of new information technologies for information exchange* between border and customs services of partner countries) must be introduced. New methods of control should be aimed at improving the electronic document flow implementation, among others, the "*single window*", when electronic trade information and documents necessary for state control of import, export or transit are submitted only once. However, for the implementation of such innovations comprehensive modernisation of the IT infrastructure has to be carried out.

Types of further cross-border infrastructure development related to efficiency of border crossings. Continuous improvement of transport infrastructure near crossing points, in particular, *roads reconstruction towards crossing points* is significant.

To reduce the time of customs clearance, to improve the quality of checks, to reduce transport delays, border crossings have to be equipped by the latest high-tech equipment such as *inspection observation systems for nonintrusive checks* for railway transport and large containers.

The problem of information technologies implementation in management and control over the movement of vehicles and goods using satellite navigation channels is highly important. In order to ensure the reliability and improved security during the transit of goods it is crucially necessary *to develop and implement an automated system for managing the transportation process based on global navigation satellite systems, radio frequency identification technology and global positioning radio system*.

References:

Кальницька М.А. Модернізація інфраструктури національного та міжнародного значення у прикордонному регіоні (на матеріалах Закарпатської області): Автореф. дис... канд. екон. наук: 08.00.05 / ДВНЗ «Ужгород. нац. ун-т». – Ужгород, 2010. – 20 с.

Повх Г.П. Інфраструктурне забезпечення транскордонного співробітництва регіонів: Автореф. дис... канд. екон. наук: 08.00.05 / Луц. нац. техн. ун-т. – Луцьк, 2011. – 20 с.

Стратегия трансграничного сотрудничества Люблинского воеводства, Львовской, Волынской и Брестской областей на 2014–2020 года. Люблин, ноябрь 2013 // www.brest-region.gov.by.

Borko, H. (2003). Paneuropean economic cooperation and its implications for the crossborder economic cooperation of Poland, Ukraine and Belarus // www.eadi.org.

Commission Regulation (EC) No 951/2007 of 9 August 2007 laying down implementing rules for cross-border cooperation programmes financed under Regulation (EC) No 1638/2006 of the European

Parliament and of the Council laying down general provisions establishing a European Neighbourhood and Partnership Instrument. Official Journal of the European Union L 210, 10/08/2007, p. 10–25.

Edmonds, C., Fujimura, M. (2006). Impact of cross-border road infrastructure on trade and investment in the Greater Mekong Subregion. ADB Institute Discussion Paper No. 48 // www.grips.ac.jp.

Fujimura, M., Adhikari, R. (2010). Critical Evaluation of Cross-Border Infrastructure Projects in Asia. ADBI working paper series, No. 226 // www.econstor.eu.

Puga, D. (2008). Agglomeration and cross-border infrastructure. EIB Papers 9/2008, European Investment Bank, Economics Department // diegopuga.org.

Shcherba, G.I. (2014). The expansion of strategic opportunities in cross-border cooperation between Ukraine and Poland in conditions of the financial crisis // wciom.ru.

Srinivasan, P.V. (2012). Regional Cooperation and Integration through Cross-Border Infrastructure Development in South Asia. Impact on Poverty. ADB South Asia Working Paper Series No. 14. November 2012 // www10.iadb.org.

Warr, P., Menon, J., Yusuf, A. (2009). Regional Economic Impacts of Cross-Border Infrastructure: A General Equilibrium Application to Thailand and Lao PDR, Working Papers on Regional Economic Integration 35, Asian Development Bank // www.adb.org.

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