SELECTED ASPECTS OF REGIONAL DEVELOPMENT OF INTERREG CROSS-BORDER PROJECT MANAGEMENT INFLUENCING DISPARITIES

LI Villa Bott DOMONKOS, RENÉ PAWERA, RADOSLAVA ŠRÚTOVÁ

Comenius University, Faculty of Management, Department of International Management, Oblasťarov 10, P.O. BOX 95, 820 05 Bratislava 25, Slovakia
email: li.villa.bott.domonkos@fm.uniba.sk, rené.pawera@fm.uniba.sk, srutova1@uniba.sk

Acknowledgement and special thanks to Faculty of Management, International Management Department, Comenius University for co-financing process of this publication.

Abstract: This article focuses on the analysis of cross-border project areas located in the border regions around Bratislava mapping the disparities of Slovakia. It analyses their regional development possibilities provided by specific INTERREG projects in the frame of the European Reg. of Development Fund. Special attention is devoted to economic project indicators, programme-specific indicators, demographic processes and phenomena related to official programme priorities pandemic caused. Besides generally acceptable statistical data representing quantitative research other data collected via analysis of databases and project communities provides insight into cross-border project expectation survey. It focuses on regional policy effects of cross-border projects, analysing best practices and its impact on the inhabitants of the regions of Slovakia. There is a comparison between cross-border project impact aspects predicting current trends influenced by the thematic of programmes in Hungary and Czech Republic. Added value can be the results of measuring expectations in economic and demographic development in the cross-border regions mainly between Hungary, Czech Republic and Slovakia after COVID-19 pandemic in the era of new programme period of the EU 2021-2027 with wide potential of INTERREG EU SK cross-border project developments through innovation and green project initiatives.

Keywords: cross-border cooperation, interregional projects, EU funds, project development, disparities, INTERREG

1 Introduction

The choice of research topic is justified since cross-border regions are involved in INTERREG project development, whereas both sides of the territory are implementing and development best practices for the new programme period. Best practice coming from the previous programme period providing higher impact on region, development and disparities, which is a common phenomenon of current globalization, is multifaceted and highly relevant today.

European Cohesion Policy, Territorial Cohesion and Cross-border cooperation principles will be defined in this literature review and further analysed if their impact on regional development is sustainable.

2 Literature Review

Cross Border Cooperation (CBC) is a fundamental component of the European Union’s (EU) policy towards its neighbouring countries. The CBC aims to achieve sustainable development along the external borders of the EU, as well as to address common challenges and reduce disparities in living standards across these borders. CBC fosters cooperation between EU countries and their neighbouring countries sharing a land border or sea crossing. The funding provided can support programmes between several EU and neighbouring countries which, for example, are part of the same sea basin. The CBC is based on the EU’s territorial cooperation model and is adapted to the specificities of external cooperation.

The foundation for the emergence of the EU regional policy is linked to several aspects such as economic, social, political and ecological, which are part of the EU regional policy in the later period.

However, what was the main objective of the establishment of the EU regional policy was to achieve an increase in economic and social cohesion, resulting in the blurring of the differences between the regions of the member countries. In other words, regional policy support means public support for companies and business sector who decide to locate their production, enterprise in the selected area. This stimulates economic activity on the one hand and, on the other hand, reduces unemployment and social expenditure.

An invariable factor or reason is the actual convergence of the economics of the individual EU members, which results in the necessity of a functioning monetary economy.

In this context, cross-border cooperation has become an essential aspect of territorial cooperation that takes place between regions or cities located on either side of a border. The primary goal of cross-border cooperation is to address common challenges that transcend national boundaries, such as environmental protection, cultural exchange, or economic development.

Cross-border cooperation aims to promote sustainable development and address the common challenges faced by border regions. It seeks to reduce disparities in living standards, improve the quality of life of citizens in border regions, and address common challenges such as environmental protection, cultural exchange, or economic development.

Furthermore, cross-border cooperation helps to strengthen the relationships between regions and cities, which can lead to more comprehensive and sustainable cooperation in the future. The establishment of cross-border cooperation agreements and partnerships can help promote trust, mutual understanding, and collaboration between regions and cities, thus creating an environment that is conducive to regional integration and development.

Established in 1990 and funded by the European Regional Development Fund (ERDF), Interreg is the EU’s primary tool for supporting cross-border partner cooperation. It aims to eliminate development common obstacles and foster the implementation of joint strategies to address shared challenges.

Cross-border cooperation (CBC) projects are crucial for achieving sustainable development and fostering a climate conducive to entrepreneurship and investment.

14 Vaidkiová, L., Kocourová, G., Kréža, Z.: Cross-border Cooperation in the Field of Investment Activity with Regional Development Implications. IOP Conference Series:
Since its inception, the European Union (EU) has advocated that significantly supporting cross-border cooperation (CBC) "enhances European integration," "promotes sustainable development" along borders, and "helps reduce disparities in living standards." Over one-third of EU citizens reside and work in border regions, where borders significantly influence their daily lives both directly and indirectly.

European Territorial Cooperation (INTERREG programs) is crucial for eliminating barriers and fostering sustainable collaboration across borders. European researchers emphasize a significant link between executed projects and the sustainable advancement of border regions.

Analysing successful examples of cross-border cooperation (CBC) projects is essential for grasping their impact on regional development and for constructing a model of success based on gathered data. As highlighted by Joanna Kurowska-Pysz, cross-border initiatives foster partnerships and aim to achieve common goals that are vital for both collaborating organizations and the development of border regions. Analysing all factors impacting the outcomes of these projects is essential for achieving sustainable territorial development in the long term.

Simultaneously, Liu et al. emphasize the significance of establishing "institutions to facilitate efficient cross-border governance" with a strong focus on technological innovation. The process of economic integration has led to an increasing number of such projects being planned or already in progress. Sanotska et al. argue that addressing market failures in border regions should be a state-level priority. They emphasize that cross-border cooperation programs initiated by neighbouring governments should serve as the main strategy to promote economic parity across both countries' regions. According to sources, the growth of the innovation-entrepreneurial ecosystem stems from internal and external developmental factors. External factors encompass a proactive innovation policy at the regional level, supported by science-intensive industries.

The Asian Development Bank's Regional Cooperation and Integration Strategy misses a clear definition of "cross-border infrastructure," but its notable aspect lies in generating cross-border externalities that are not produced by national projects alone. This infrastructure yields "additional" advantages that impact the involved countries. This implies that the overall benefits from cross-border initiatives surpass those achievable through national projects. Infrastructure plays a crucial role in facilitating international trade across borders. The development of transport infrastructure is widely recognized for its enduring positive influence on economic growth. At the same time, cross-border projects are "accompanied by high complexity, difficulty, and uncertainty." The study referenced reveals that cross-border projects have not received adequate attention in research, and there is a lack of systematic examination of management models essential for successful preparation and implementation of cross-border infrastructure projects.

They emphasise the following priorities: ensuring a clear formulation and formulation of the corridor's concept; utilizing distribution analysis to guide mutually beneficial outcomes, integrated within situational and SWOT analyses; promoting fair public-private partnerships, and addressing transport infrastructure limitations. While acknowledging these factors' importance in enhancing external project impacts and fostering stable cross-border cooperation, they propose a model for successful cross-border project management. In project management, two main concepts prevail: achieving project success, which focuses on the product's quality, timely delivery, and public perception; and ensuring project management success, which centres on meeting project parameters, professionalism, team skills, and stakeholder engagement capabilities.

Cross-border regional development within the EU's cohesion policy framework is strategically aligned with the environmental priorities of "Green Europe" and the European Green Deal. These initiatives emphasize sustainability, climate action, and inclusive growth across neighbouring regions. Cohesion policy funds support projects that promote environmental sustainability through cross-border cooperation, including renewable energy infrastructure, shared conservation efforts, and climate-friendly technologies. These initiatives not only enhance regional economic development but also contribute to EU-wide goals of carbon neutrality, innovation, social inclusion, and policy integration in tackling environmental challenges collectively across borders.

3 Research problems and goals

The goal of this article is to comparatively analyse the two specific calls of INTERREG HU SK and INTERREG CZ SK with evidence-based list of approved projects and from filtered data of the already submitted and approved projects in the first two calls of the programme. We can find the source data for the Czech Slovak cooperation online from the programme period webpage, https://14-20.sk-cz.eu/sk/projekty/zoznam-projektov, https://www.sku.eu/funded-projects/infographics as well as to select from the databases of the KEEP.eu data from INTERREG HU SK programme page.

After a short descriptive analysis of the priority axis, we can see that the number of projects in the divided forms are. Table 1 states a distribution between the Priority Axis, which are the most important topics for the previous programme period. From 47 % of interest dedicated to "Nature and Culture" topics we can assume that Green elements of a project are generally present. In very short characteristic it is Climate action, Clean energy, Sustainable industry, Buildings and renovations, Sustainable mobility, Eliminating pollution, Farm to Fork and Preserving biodiversity, which can be present in the topic, goal and aim of projects developed under Priority Axis 1 where 59 projects were financed for 68,22 million EUR.

Table 1: Number of projects divided by their Priority Axis INTERREG HU-SK in 2014-2020

<table>
<thead>
<tr>
<th>Priority Axis of INTERREG</th>
<th>Amount in Million EUR</th>
<th>Percentage</th>
<th>Number of projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature and Culture</td>
<td>68.22</td>
<td>47%</td>
<td>50</td>
</tr>
<tr>
<td>Mobility</td>
<td>22.48</td>
<td>15%</td>
<td>15</td>
</tr>
<tr>
<td>Employment</td>
<td>32.04</td>
<td>22%</td>
<td>39</td>
</tr>
<tr>
<td>Institutional cooperation</td>
<td>22.45</td>
<td>15%</td>
<td>55</td>
</tr>
</tbody>
</table>

Source: Own processing for the research based on https://www.skhu.eu/funded-projects/infographics

The research problem is grounded between the disparities and differences Czech-Slovak Interreg and Hungarian-Slovak INTERREG in terms of the priorities and new focus on green elements in cohesion policy as one of the most prior selected aspects of the new programmed period. This article has stated three general hypotheses based on data and survey. We defined green elements as per the Green Deal in terms of sustainability and ESG reporting.

H1) In the programme period 2014-2020 there is a correlation and ESG reporting.

H2) In new programme period 2021-2027 green elements in

H3) Based on the profiles of the applicants there are new differences Czech-Slovak Interreg and Hungarian-Slovak Republic/

We start to investigate the research programme statistics in terms of sustainability of the projects.

Table 2: Comparison of Green projects element’s frequency in Hungary and Czech Republic in 2014-2020

<table>
<thead>
<tr>
<th>INTERREG Country</th>
<th>Hungary</th>
<th>Czech Republic</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency- nod</td>
<td>160</td>
<td>150</td>
<td>310</td>
</tr>
<tr>
<td>Frequency- yes</td>
<td>7</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>All group- frequency</td>
<td>167</td>
<td>158</td>
<td>325</td>
</tr>
<tr>
<td>Frequency</td>
<td>52%</td>
<td>48%</td>
<td>100%</td>
</tr>
</tbody>
</table>


It is important firstly calculate the chi-square statistic, p-value, and expected frequencies manually to ensure accuracy. Calculating the chi-square statistic:

\[ \chi^2 = \sum \left( \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \right) \]

where Oij are the observed frequencies and Eij are the expected frequencies. P-value Calculation is using the chi-square distribution table or a statistical software to find the p-value for \( \chi^2 = 0.179 \) 0.179 with 1 degree of freedom. From this calculation, the chi-square statistic is approximately 0.179, and the degrees of freedom are 1. The p-value can be obtained from the chi-square distribution table corresponding to this chi-square value and degrees of freedom. Given the low chi-square statistic value, it is likely that the p-value will be higher than 0.05, suggesting that there is no significant association between the country and the response in this data set. Therefore, we have seen other relevant methodology as the comparison method by Pareto effect and existing tools. Before that we have seen if there is a correlation between the data of the green projects in the new programmed period, which has not come to the end yet, but in a very short period it has experienced more tools of the green elements as the strategy of EU is heading that way in cohesion policy. Table 3 analyses the current requested, applied and expected frequencies manually to ensure accuracy.

Table 3: Requested projects from 2021-2024 including green elements in new programme period

<table>
<thead>
<tr>
<th>INTERREG Country- Frequency of green projects</th>
<th>Hungary</th>
<th>Czech Republic</th>
<th>Line Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency- no</td>
<td>67</td>
<td>128</td>
<td>195</td>
</tr>
<tr>
<td>Frequency- yes</td>
<td>24</td>
<td>18</td>
<td>42</td>
</tr>
<tr>
<td>All group</td>
<td>91</td>
<td>146</td>
<td>237</td>
</tr>
</tbody>
</table>

Source: Own processing for the research based on accurate INTERREG data

The chi-square test of independence on the data, whereby we extracted the counts from the provided table and organized them into a contingency table format showed a stronger correlation in comparison to Table 2. Table 2 demonstrates frequent elements in Hungary with a stronger correlation. This is a two-dimensional array where rows represent different categories of one variable (response: "yes for green elements" or "no") and columns represent different categories of another variable (country: Hungary or Czech Republic). After performing the chi-square test was used for contingency function from module to perform the chi-square test. This function takes the contingency table as input and returns several values, including the chi-square statistic, p-value, degrees of freedom, and expected frequencies. The chi-square statistic (\( \chi^2 = 2.92 \) p-value: degrees of freedom and expected frequencies are obtained from the chi-square test. Chi-square statistic equals \( \chi^2 = 6.65 \) by p-value: p=0.0099 with degrees of freedom: 1

Frequency-no: Hungary: 74.87, Czech Republic: 120.13

Frequency-yes: Hungary: 16.13, Czech Republic: 25.87

The p-value (0.0099) is less than the significance level of 0.05, indicating that there is a statistically significant association between the country and the response. According to the results shown in Table 3, it is clear that only less than one fifth of the applicants of the selected INTERREG call, namely by number only 17.55% would like to be further active in sustainable Interreg projects and used them as a priority topic. Although this result is in contradiction with the first analysis presented above regarding the interest in this learning, it can be explained by the fact that the general level of intentionality in project management and willingness is currently lower and therefore further motivation toward projects with green elements is rejected from the applicants' point of view. Furthermore, it can be noted that there is a statistically significant difference between the response rates.

4 Results

An invaluable factor or reason is the actual convergence of the economies of the individual EU members, we resulted in comparing success factors based on literature review, topics of the selected INTERREG programme and project management success factors.

Table 4: Tools of regional economic policy

<table>
<thead>
<tr>
<th>IMPACT</th>
<th>Information and counselling</th>
<th>Financial motivation</th>
<th>Infrastructure + GREEN Element</th>
<th>Administrative challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility</td>
<td>Information about locally</td>
<td>Localizational support</td>
<td>Localizational roles</td>
<td>Localizational investments</td>
</tr>
<tr>
<td>Investment</td>
<td>---</td>
<td>Internalized</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>New workplaces</td>
<td>---</td>
<td>Financial for strategic workplaces</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>New technologies and innovation</td>
<td>---</td>
<td>Technologies and innovation counselling</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Establishment of</td>
<td>---</td>
<td>Entrepreneurial counselling</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cooperation</td>
<td>---</td>
<td>Cooperative partnership establishment help</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Education</td>
<td>Information about possibilities of education</td>
<td>Construction of educational infrastructure</td>
<td>Construction of educational infrastructures, facilities, science, technology and business centres</td>
<td></td>
</tr>
<tr>
<td>Mobility</td>
<td>Information</td>
<td>Contribution</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
By selecting the measures tools by disparity improvements based on Maeier-Tödling and the results of survey we defined the followings for project application form requested priorities described in the projects in general. Success factor is a tool, which defines the sustainable and green implementation of the European projects based on tools of regional development. Critical success factors for managing cross-border projects identified using case study analysis of existing projects with a content analysis of the above mentioned all Hungarian and Czech CBC projects. In both periods: Relations between countries (cities), Ensuring quality of life standards, Young and talented people, General goals and plans of projects implemented by countries; Strengthening political commitment, Citizen participation in decision making, Strong territorial strategy, Prevention of duplication of infrastructure, Enhancing a sense of belonging, Availability of diverse infrastructure, Green Europe, Access to investment, A strong economy, Political transparency and commitment, Marketing and advertising. With these mentioned and selected aspects, we have compared the Czech and Hungarian cross-border region and the most important Pareto effected selected aspects which are common highlighted.

### Table 5: Tools of regional economic policy in old and new programme period.

<table>
<thead>
<tr>
<th>Common Aspects of CBC</th>
<th>Different Aspects of CBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relations between countries (cities)</td>
<td>Citizen participation in decision making</td>
</tr>
<tr>
<td>Strengthening political commitment</td>
<td>Attracting strong territorial strategy</td>
</tr>
<tr>
<td>Ensuring quality of life standards</td>
<td>Green Europe</td>
</tr>
<tr>
<td>Young and talented people</td>
<td>Political transparency and commitment</td>
</tr>
<tr>
<td>General goals and plans of projects implemented by countries</td>
<td>Marketing and advertising</td>
</tr>
<tr>
<td>Enhancing a sense of belonging</td>
<td>Access to green investment</td>
</tr>
</tbody>
</table>

Source: Based on research data INTERREG HU SK CZ project databases.

After looking at the data of the testing third hypothesis H3 Based on the profiles of the applicant there are new regional economic policies for disparities opened in projects. Relationship as a diplomatic topic is important for both countries in Pareto dimension, strengthening political commitment, as well as young talented people inclusion is one of the main elements by general goals and plans implementation. As mentioned in theoretic chapter enhancing a sense of belonging means cohesion from perspective of EU and strong correlation and cooperativeness from the citizen’s point of view.

Based on the analysis the impact is in infrastructure, financial motivation, and infrastructure. We tested a hypothesis whether settlements and citizens have information in and financial background of Green projects and what this facts means. Based on data from project management of INTERREG projects we found out a very low level of guided information and commitment via Green topics and strong territorial strategy.

**5 Conclusion**

The European Cohesion Policy is a cornerstone of the EU’s efforts to ensure balanced and sustainable development across its regions. By addressing economic, social, and territorial disparities, it aims to create a more integrated and harmonious European Union. For scientific studies, this policy provides a rich field of analysis concerning its strategies, implementation, and outcomes in fostering cohesion and development. This paper investigates the efficacy of cross-border cooperation programs in fostering regional development along the Hungarian-Slovak and
Czech-Slovak border. By comparatively analysing the programs implemented in Slovakia, we aim to illuminate their impact and regional outcomes. A mixed-methods approach employing both qualitative and quantitative data analysis will be utilized to assess socio-economic dynamics in these border regions. This includes scrutinizing job creation, population shifts, and investment patterns. We posit that Hungary and Slovakia's cross-border territorial cooperation has significantly contributed to regional development and the mitigation of shared challenges. Therefore, strengthening cooperation mechanisms, prioritizing human capital investment, and fostering innovation are crucial for the two nations to co-create sustainable and inclusive development across their shared border regions.

The paper compares priority axes, programme indicator impacts as the measure of best practices in cross border area of Bratislava, in Czech and Hungarian border region and hypothesizes that the implemented project has impact on programme development, project development and priority axis. The main findings are correlations between the missing green elements of the projects in the old programme period with regard to the newly established 2020-2024 period, almost the same amount in the half time. It can be interesting to repeat the tool and finish the survey 2027 and see the linear or correlation distribution of the data. In general, we can declare, there is a missing and evited impact of environmental factors, which is now in changing period, due to the priority axis and typical Green Deal and Green Europe declaration of values and EU priorities. As this prognosis might continue, we can declare a larger project impact in Citizen contribution, Young and talented people joined and attracting strong territorial strategy, which is the alfa and omega of the EU Cohesion Policy.

Literature:

15. Pawera at kol.: Regionalna politika a politika súdržnosti Európskej únie, 2013, Univerzita Komenského v Bratislave

Primary Paper Section: A

Secondary Paper Section: AH, AE, AO, AP