

## CAN DEVELOPMENT BE MEASURED? BEYOND INDICATORS AND GIS: ASSESSING THE REAL IMPACTS OF THE HUNGARY - CROATIA INTERREG PROGRAMME

### МОЖЕ ЛИ СЕ РАЗВОЈ ИЗМЕРИТИ? ИЗВАН ИНДИКАТОРА И ГИС-А: ПРОЦЕНА СТВАРНИХ УТИЦАЈА INTERREG ПРОГРАМА МАЂАРСКА - ХРВАТСКА

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**Abstract:** *This paper examines the extent to which the real impacts of cross-border cooperation programmes can be adequately measured using conventional evaluation indicators. Using the Hungary–Croatia INTERREG Programme as a case study, the research aims to analyse whether existing monitoring and evaluation systems capture actual developmental changes within border communities. The study is based on the assumption that administratively measurable indicators do not necessarily reflect the broader social, institutional, and developmental impacts of cooperation programmes. The research applies a qualitative analysis of scientific literature, programme evaluation reports, previous empirical studies, and GIS-based territorial analysis. The findings indicate that while existing evaluation systems successfully measure programme outputs and financial performance, they only partially capture intangible effects such as knowledge transfer, social capital development, institutional networking, and the sustainability of cooperation. The paper concludes that a more comprehensive evaluation framework combining quantitative indicators, qualitative evidence, and territorial analysis is needed to assess the real impacts of cross-border cooperation.*

**Keywords:** *cross-border cooperation, INTERREG, programme evaluation, territorial development, GIS.*

**Сажетак:** *Овај рад испитује у којој мери се стварни утицаји програма прекограничне сарадње могу адекватно мерити применом конвенционалних евалуационих индикатора. Користећи INTERREG програм Мађарска – Хрватска као студију случаја, циљ истраживања је анализа способности постојећих система праћења и евалуације да обухвате стварне развојне промене у пограничним заједницама. Истраживање полази*

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*од претпоставке да административно мерљиви индикатори не одражавају нужно шире друштвене, институционалне и развојне утицаје програма сарадње. У раду су примењене методе анализе научне литературе, евалуационих извештаја програма, резултата претходних емпиријских истраживања и GIS засноване територијалне анализе. Резултати указују да постојећи системи евалуације успешно мере пројектне резултате и финансијску реализацију, али само делимично обухватају нематеријалне ефекте као што су пренос знања, развој друштвеног капитала, институционално умрежавање и одрживост сарадње. Закључује се да је за процену стварних утицаја прекограничне сарадње неопходан свеобухватнији евалуациони оквир који обједињује квантитативне индикаторе, квалитативне доказе и територијалну анализу.*

**Кључне речи:** *прекогранична сарадња, INTERREG, евалуација програма, територијални развој, GIS.*

**JEL classification:** R58, O18, H83.

## INTRODUCTION

Cross-border cooperation has become one of the most important instruments of the European Union's cohesion policy and territorial development framework. Since the establishment of the INTERREG initiative in 1990, European Territorial Cooperation programmes have sought to reduce the negative effects of national borders, strengthen territorial integration, and promote balanced socio-economic development in border regions (Perkmann, 2003; Scott & Liikanen, 2010; Medeiros, 2015). Through successive programming periods, substantial financial resources have been allocated to support joint projects in areas such as economic development, environmental protection, institutional cooperation, education, innovation, and social inclusion.

The importance of cross-border cooperation has increased significantly over time. What was initially conceived as a mechanism for overcoming the peripheral position of border regions has gradually evolved into a broader instrument for strengthening European integration, fostering territorial cohesion, and supporting multi-level governance (Harguindéguy & Bray, 2009; Scott, 2013). As a result, INTERREG programmes are no longer assessed solely through their contribution to regional development but also through their capacity to generate sustainable networks, strengthen institutional capacities, encourage knowledge exchange, and create long-term cooperation structures across national borders (Pámer, 2021).

Despite more than three decades of implementation and extensive financial investments, the question of how to measure the actual impact of

cross-border cooperation remains unresolved. Existing evaluation systems predominantly rely on output and result indicators, including the number of projects implemented, financial absorption rates, infrastructure investments, project partnerships, and participant numbers. While such indicators provide valuable information regarding programme implementation and administrative performance, they often fail to capture broader and more complex developmental effects (Medeiros, 2015; ESPON, 2020). Furthermore, recent research highlights a fundamental limitation of performance-based evaluation systems. As Montemayor Cejas and Esparza Masana (2026) argue, the presumed relationship between successful budget execution and actual developmental outcomes is frequently assumed rather than empirically demonstrated. Consequently, high levels of financial absorption or expenditure cannot automatically be interpreted as evidence of territorial development or long-term programme effectiveness.

The challenge becomes particularly evident when evaluating intangible outcomes of cross-border cooperation. Numerous studies suggest that some of the most significant effects of cooperation programmes occur in areas that are inherently difficult to quantify, including the development of social capital, institutional learning, trust-building, knowledge transfer, network formation, and long-term partnership sustainability (Perkmann, 2007; Scott, 2013; Medeiros, 2015). These outcomes frequently emerge gradually, extend beyond the official duration of projects, and often remain insufficiently reflected in conventional monitoring and evaluation frameworks.

The problem of measuring programme impact has also been recognised within official programme evaluations. The Final Report on the Impact Assessment of the ongoing Interreg V-A Hungary-Croatia Cooperation Programme 2014-2020 carried out in the course of the CB Joint Strategy project explicitly highlights the absence of a universally accepted methodology for assessing the impacts of cross-border cooperation programmes and emphasises the methodological difficulties associated with determining long-term programme effects, sustainability, and the contribution of interventions to wider territorial development processes. Furthermore, the assessment acknowledges that many observed changes occur with significant time delays and are simultaneously influenced by numerous external socio-economic factors, making direct attribution particularly challenging.

"Interreg is a policy tool to improve the situation and not a mere funding tool." (Pámer et al., 2024), therefore, should Interreg be understood as a policy instrument aimed at improving territorial conditions rather than

merely a funding mechanism. This perspective reinforces the need to evaluate programme success through broader developmental outcomes rather than solely through financial absorption and administrative indicators.

These challenges raise a broader theoretical question concerning the relationship between measurable indicators and actual development outcomes. Contemporary debates increasingly question whether complex social and developmental processes can be adequately represented through quantitative indicators alone. Similar concerns have been raised in discussions surrounding knowledge creation and evaluation systems. Peters et al. (2024) argue that linear and indicator-based approaches often simplify complex social realities and fail to capture contextual, experiential, and relational dimensions of development. Although developed in a different context, such critiques provide an important perspective for examining the limitations of current approaches to evaluating territorial development and cross-border cooperation.

Against this background, the present paper examines the case of the Hungary–Croatia INTERREG Programme as an example of a long-standing cross-border cooperation framework within the European Union. The paper seeks to critically analyse existing approaches to programme evaluation and to explore whether current indicator systems are capable of capturing the real developmental impacts of cross-border cooperation. Particular attention is devoted to the relationship between administratively measurable outputs and broader developmental outcomes, including social capital formation, institutional networking, knowledge transfer, and long-term cooperation sustainability. In addition, the paper considers the potential contribution of Geographic Information Systems (GIS) in identifying spatial patterns of development and territorial inequalities that may complement traditional evaluation approaches.

The central research question guiding this study is: Can the real developmental impact of cross-border cooperation programmes be adequately measured through existing evaluation indicators, or do the most significant effects remain beyond the scope of conventional evaluation frameworks?

## **2. Theoretical Background**

### **2.1. Cross-Border Cooperation and Territorial Cohesion**

Cross-border cooperation has become one of the fundamental instruments for promoting territorial cohesion within the European Union. Border regions have traditionally been characterised by peripheral geographical positions, weaker economic performance, lower accessibility, and fragmented institutional structures resulting from the presence of national borders (Perkmann, 2003). Consequently, European regional policy has increasingly recognised cross-border cooperation as an important mechanism for overcoming border-related barriers and stimulating more balanced territorial development.

The establishment of the INTERREG initiative in 1990 marked a significant step towards strengthening cooperation between neighbouring regions across Europe. Over time, cross-border cooperation evolved from a relatively limited policy instrument into one of the central pillars of European Territorial Cooperation, contributing not only to economic development but also to institutional integration, social interaction, environmental management, and governance innovation (INTERACT, 2015; Scott, 2013). Since 2007, European Territorial Cooperation has been formally recognised as one of the core objectives of Cohesion policy, further reinforcing its strategic importance within the European integration process (Pámer, 2021).

The concept of territorial cohesion extends beyond economic convergence and infrastructure development. It emphasises the creation of functional territorial relationships, balanced access to opportunities, and stronger integration between regions regardless of administrative and national boundaries (Medeiros, 2015). Within this framework, cross-border cooperation is expected to contribute to reducing the so-called border effect by facilitating interactions among public institutions, educational organisations, businesses, civil society organisations, and local communities.

Several authors argue that the added value of cross-border cooperation should not be assessed solely through economic indicators. Instead, its contribution lies equally in the development of institutional capacities, governance structures, collaborative networks, and social relationships that support long-term regional resilience and sustainable development (Perkmann, 2007; Scott & Liikanen, 2010; Medeiros, 2015). Such outcomes are particularly relevant in border regions, where historical, administrative, cultural, and linguistic barriers often limit the intensity of cooperation and

hinder the creation of integrated territorial systems. Recent research has increasingly focused on the quality and intensity of cooperation rather than on the mere existence of cooperative activities. Pámer (2021) argues that cross-border cooperation should be understood as a multidimensional process whose intensity can be analysed through various indicators reflecting the depth, sustainability, and institutional embeddedness of collaborative relationships. This perspective suggests that successful cooperation cannot be reduced to the number of funded projects or implemented activities but should also encompass the capacity of programmes to generate lasting developmental effects.

In this context, the Hungary - Croatia INTERREG Programme represents a particularly relevant case for examining the relationship between programme implementation and territorial development outcomes. Over successive programming periods, the programme has supported numerous initiatives aimed at strengthening economic competitiveness, environmental sustainability, institutional cooperation, and educational development within the border region. While these interventions have produced measurable outputs, questions remain regarding their broader contribution to territorial cohesion and long-term regional transformation.

## **2.2. Challenges of Measuring Development and Programme Impact**

The long-standing debate surrounding Interreg programmes reflects a broader question addressed in this paper: should programme success be evaluated through the volume of allocated funding and implemented activities, or through the extent to which cooperation removes barriers and generates long-term developmental effects (Pámer et al., 2024). The evaluation of development programmes has long represented one of the most challenging issues in regional and cohesion policy research. While financial expenditures, implemented activities, and programme outputs can be measured relatively easily, the assessment of actual developmental impacts remains considerably more complex. This challenge becomes particularly evident in the context of cross-border cooperation programmes, where interventions aim not only to achieve tangible outputs but also to stimulate long-term social, institutional, and territorial change.

Traditional evaluation frameworks are primarily based on output and result indicators designed to monitor programme implementation and assess progress towards predefined objectives. Such indicators typically include the

number of funded projects, financial absorption rates, newly established partnerships, participants involved in activities, infrastructure investments, and other quantifiable outputs. Although these measures provide important information regarding programme performance and accountability, they often offer only a partial understanding of broader developmental processes (Medeiros, 2015).

One of the central challenges lies in distinguishing between programme outputs and programme impacts. Outputs refer to the immediate products of interventions, while impacts represent longer-term changes that can be attributed, directly or indirectly, to programme activities. The European Commission's evaluation guidelines emphasise that impacts should be understood as changes that can be credibly linked to a specific intervention, while acknowledging that observed developments are simultaneously influenced by numerous external economic, social, political, and institutional factors.

This problem is particularly pronounced in cross-border cooperation programmes. According to the Impact Assessment of the Interreg V-A Hungary–Croatia Cooperation Programme, there is no universally accepted methodology for assessing the impacts of cross-border cooperation interventions. The report further highlights several methodological limitations, including delayed manifestation of programme effects, difficulties in assessing sustainability, the influence of external factors on regional development processes, and the subjective nature of survey-based evaluations. Such findings suggest that measuring the real contribution of cooperation programmes extends beyond the simple monitoring of predefined indicators. The growing body of literature on territorial impact assessment similarly emphasises the limitations of conventional evaluation approaches. The ESPON TIA-CBC methodology argues that cross-border cooperation programmes generate effects that are often multidimensional, territorially differentiated, and highly context-dependent. Consequently, effective evaluation requires a combination of quantitative, semi-quantitative, and qualitative approaches capable of capturing both measurable outputs and broader territorial transformations.

A further challenge concerns the increasing reliance on indicators as proxies for development itself. Contemporary governance systems frequently assume that phenomena become manageable once they are translated into measurable indicators. However, scholars have repeatedly warned that complex social processes may be oversimplified when reduced to numerical

representations. Peters, Jandrić and Green (2024) argue that linear and indicator-driven approaches often fail to capture contextual, experiential, relational, and tacit dimensions of social change. Although their critique is developed within the broader discussion of knowledge systems, it offers valuable insights into the evaluation of territorial development programmes, where some of the most significant outcomes remain difficult to quantify.

In the context of cross-border cooperation, this dilemma becomes particularly relevant because many intended programme effects extend beyond economic performance and infrastructure development. Trust-building between institutions, the creation of durable cooperation networks, the transfer of knowledge and experience, organisational learning, and strengthened social relations often emerge gradually and remain only partially visible through conventional indicators. As a result, programmes may appear successful according to administrative evaluation criteria while their actual contribution to long-term territorial development remains uncertain.

These considerations raise an important question regarding the adequacy of existing evaluation frameworks. If development is understood as a multidimensional process involving economic, social, institutional, and territorial transformation, then evaluation systems focused predominantly on measurable outputs may fail to capture some of the most significant programme achievements. Consequently, the assessment of cross-border cooperation requires a broader analytical perspective capable of integrating both quantitative indicators and less tangible dimensions of development.

### **2.3. Social Capital and Intangible Effects of Cross-Border Cooperation**

One of the most frequently discussed limitations of traditional evaluation systems concerns their ability to capture intangible outcomes generated through cross-border cooperation. While programme monitoring frameworks are generally effective in recording financial expenditures, implemented activities, infrastructure investments, and other measurable outputs, they are considerably less successful in identifying broader social and institutional transformations that emerge over longer periods of time.

The literature increasingly recognises that some of the most significant effects of cross-border cooperation occur in areas that are inherently difficult to quantify. Among these effects, social capital occupies a particularly important position. Social capital refers to networks, trust, norms of reciprocity, and relationships that facilitate cooperation among individuals and

organisations (Putnam, 1993). In border regions, where administrative, cultural, historical, and linguistic barriers may limit interaction, the development of social capital represents an important prerequisite for sustainable territorial development.

Cross-border cooperation programmes create opportunities for repeated interactions among public institutions, educational organisations, businesses, civil society organisations, and local communities. Through joint project implementation, participants establish professional contacts, exchange experiences, acquire new knowledge, and develop trust-based relationships. Consequently, programme benefits frequently extend beyond the immediate objectives and outputs defined within project documentation.

Several authors emphasise that institutional learning, knowledge transfer, partnership building, and network formation represent some of the most valuable long-term outcomes of cross-border cooperation initiatives (Perkmann, 2007; Scott, 2013; Medeiros, 2015). The importance of partnership networks has also been emphasised in recent studies, which highlight cross-border cooperation as a process based on interactions among local, regional, national and European actors, contributing to long-term cooperation structures beyond individual projects (Maras Benassi, 2025). Such outcomes often contribute to the creation of durable cooperation structures capable of generating additional projects, strengthening regional capacities, and supporting future development initiatives. However, because these processes evolve gradually and frequently continue beyond the official duration of projects, they remain only partially visible within conventional monitoring and evaluation systems.

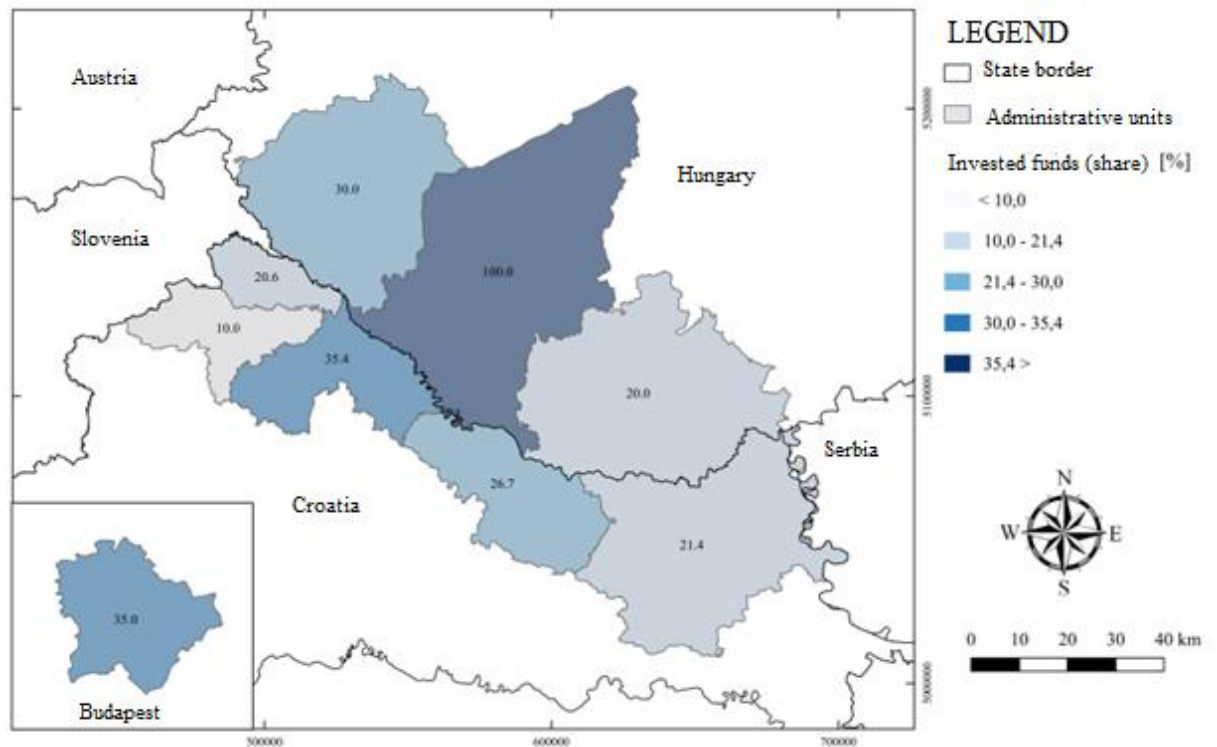
The measurement of intangible programme effects therefore presents a significant methodological challenge. Trust, cooperation culture, organisational learning, and strengthened institutional capacities rarely produce immediate or directly observable outcomes. Nevertheless, they may substantially influence the long-term sustainability and effectiveness of development interventions. Consequently, evaluations focused exclusively on measurable outputs risk overlooking some of the most important contributions of cross-border cooperation programmes to territorial cohesion and regional development.

## 2.4. GIS and Territorial Impact Assessment

The growing availability of spatial data and analytical tools has contributed to the increasing use of Geographic Information Systems (GIS) in regional development research and programme evaluation. GIS enables the visualisation of development interventions, the identification of territorial disparities, and the analysis of spatial patterns that may remain difficult to detect through conventional statistical methods alone.

Within the context of cross-border cooperation programmes, GIS has emerged as a valuable tool for examining the geographical distribution of projects, partnerships, financial resources, and beneficiaries. Spatial analysis provides opportunities to identify territorial concentrations of development activities, assess participation patterns, and explore potential inequalities in programme implementation across different regions.

**Figure 1. The share of project budget intended for educational activities by counties**



Source: Ravlić et al. 2019, p.1078

*Figure 1* illustrates territorial differences in the allocation of project resources intended for educational activities within the Hungary–Croatia cross-border area. The map demonstrates that investments in human capital were not distributed uniformly across the programme territory, suggesting variations in development priorities and project structures among participating counties. GIS analysis enables the identification of such spatial patterns and contributes to understanding the territorial distribution of programme interventions. However, while spatial visualisation reveals where resources were allocated, it does not provide evidence regarding the effectiveness of those investments. Higher allocations for educational activities do not necessarily imply stronger knowledge transfer, increased institutional capacities, or greater developmental impacts. Consequently, GIS analysis should be understood as a complementary tool that supports territorial interpretation of programme implementation rather than as evidence of development itself.

However, despite its analytical potential, GIS cannot independently determine the developmental significance of observed spatial patterns. A higher concentration of projects or partnerships does not necessarily imply stronger social capital, more effective knowledge transfer, or greater long-term developmental impacts. Similarly, regions with lower participation levels may still experience substantial institutional learning and cooperation benefits that remain invisible within spatial datasets.

For this reason, GIS should be understood as a complementary rather than a standalone evaluation tool. While spatial analysis contributes to understanding the territorial dimension of development interventions, the assessment of programme effectiveness requires the integration of quantitative indicators, qualitative evidence, and broader contextual analysis. Such an approach appears particularly relevant in the evaluation of cross-border cooperation programmes, where many of the most important outcomes emerge through complex interactions between territorial, institutional, and social factors.

### **3. Research Design and Methodology**

#### **3.1. Research Approach**

This study adopts a qualitative and analytical research approach aimed at examining the relationship between administratively measurable programme indicators and the broader developmental impacts of cross-border

cooperation. Particular attention is devoted to the limitations of conventional evaluation frameworks in capturing long-term and intangible effects of cooperation programmes.

The research is based on the assumption that the effectiveness of cross-border cooperation cannot be fully understood through output and result indicators alone. Consequently, the study combines theoretical insights from the literature on territorial cohesion, programme evaluation, social capital, and cross-border cooperation with empirical evidence derived from programme documentation and previous research conducted in the Hungary–Croatia border region.

### **3.2. Data Sources**

The analysis relies on multiple sources of data. First, relevant scientific literature addressing cross-border cooperation, territorial cohesion, social capital, programme evaluation, and territorial impact assessment was reviewed. Particular attention was given to studies examining the effectiveness and impacts of European Territorial Cooperation programmes.

Second, official programme documents and evaluation reports were analysed, including the Interreg V-A Hungary–Croatia Cooperation Programme documentation and the Impact Assessment Study prepared for the programme. These documents provide information on programme objectives, implementation results, monitoring indicators, territorial coverage, and identified evaluation challenges.

Third, the study incorporates findings from previous empirical research conducted among beneficiaries of cross-border cooperation projects implemented within the Hungary–Croatia border area. The research examined perceptions of programme beneficiaries regarding project outcomes, knowledge acquisition, partnership development, cooperation sustainability, and broader developmental effects within local communities. The inclusion of beneficiary perspectives enables a comparison between officially monitored programme indicators and perceived programme impacts.

### **3.3. Spatial Analysis**

To complement the analysis of programme indicators and beneficiary perceptions, Geographic Information Systems (GIS) were used to examine selected spatial dimensions of programme implementation. Spatial analysis

focuses on territorial differences in the allocation of project resources intended for educational activities within the programme area. The selected GIS map was used to illustrate spatial patterns of investment and to explore the extent to which the territorial distribution of resources can contribute to understanding programme impacts.

The purpose of the GIS analysis is not to measure development directly but rather to visualise spatial patterns of programme participation and identify potential territorial concentrations and disparities. The spatial perspective provides an additional analytical layer that contributes to understanding how programme activities are distributed across the border region and whether territorial patterns correspond with broader development objectives.

#### **4. What Do Programme Indicators Measure?**

Evaluation systems of European Territorial Cooperation programmes are primarily designed to monitor programme implementation and ensure accountability in the use of public funds. Consequently, the majority of indicators focus on measurable outputs and results, including the number of approved projects, financial absorption rates, infrastructure investments, established partnerships, organised events, and participants involved in programme activities (European Commission, 2021; Interreg V-A Hungary–Croatia Programme Documentation).

Such indicators provide valuable information regarding the efficiency of programme implementation and achievement of predefined objectives. They enable programme authorities to monitor progress, compare performance across programming periods, and demonstrate compliance with regulatory requirements. However, they also reflect a predominantly administrative understanding of programme success (Medeiros, 2015).

The analysis of programme documentation and evaluation reports indicates that the Hungary–Croatia INTERREG Programme has largely been assessed through indicators related to project implementation, financial performance, and immediate programme outputs (Impact Assessment Study, 2021). While these indicators offer important evidence regarding programme activity, they provide limited insight into broader developmental processes occurring within border communities.

The challenge lies in the fact that measurable outputs do not necessarily correspond to developmental outcomes. A high number of projects, substantial financial investments, or extensive participation levels may indicate successful

programme implementation, yet they do not automatically demonstrate stronger social cohesion, increased trust among institutions, sustainable cooperation networks, or long-term territorial transformation (Medeiros, 2015; Scott, 2013). Consequently, programme indicators often reveal what has been implemented but provide only partial evidence regarding what has actually changed.

### **5. What Do Beneficiaries Perceive as Programme Impacts?**

While official evaluation systems focus primarily on measurable outputs, beneficiary perspectives frequently highlight a different set of programme outcomes. Previous research conducted among beneficiaries of cross-border cooperation projects within the Hungary–Croatia border region suggests that participants often perceive programme value through less tangible dimensions of cooperation (Ravlić, 2019). Empirical findings indicate that 87.2% of respondents agreed or strongly agreed that participation in cross-border projects contributed to the improvement of their knowledge, skills, and abilities. Furthermore, 76.4% reported that the acquired competences were subsequently used in the development of future activities, while 71.6% recognised the importance of continuing education and lifelong learning after project completion. These findings suggest that project participation contributed not only to immediate project outputs but also to the development of a broader learning culture among beneficiaries (Ravlić, 2019).

Similar findings were reported in previous research on the IPA Cross-Border Cooperation Programme Hungary–Croatia 2007–2013, where 72.6% of respondents disagreed that partnerships and project activities would have been established in the same scope without EU funding, while 72.6% agreed that partner organisations contributed significantly to the development of organisational skills, knowledge and capacities. Furthermore, 80.4% of respondents agreed that knowledge, skills and experiences acquired through project implementation improved both their own organisations and project partners (Ravlić et al., 2019). Such findings indicate that programme impacts extend beyond the immediate objectives specified in project applications and continue to influence participating organisations after project completion.

The importance of cooperation networks is additionally confirmed by findings showing that 88.2% of respondents agreed that project implementation increased contacts and cooperation with organisations at the local level, indicating that cross-border projects contribute to the creation of

broader institutional and community networks beyond formal project partnerships. This finding is particularly important because it points to the creation of cooperation structures that frequently continue beyond individual projects and may serve as a foundation for future development initiatives. Such effects are rarely visible through conventional programme indicators despite their potential contribution to long-term territorial cohesion. Taken together, these findings suggest that beneficiaries tend to perceive project success primarily through learning, cooperation, and network development rather than through financial or administrative indicators.

The importance of these outcomes is particularly evident in sectors characterised by limited resources and relatively weak institutional capacities. In such contexts, participation in cross-border cooperation programmes often contributes to organisational learning, increased project management competencies, improved communication between institutions, and stronger engagement in future cooperation initiatives (Perkmann, 2007; Scott & Liikanen, 2010). Earlier research conducted within the Hungary–Croatia programme also demonstrated that beneficiaries perceived cross-border cooperation as an important mechanism for knowledge transfer and organisational capacity development. Respondents reported that cooperation with partner organisations contributed to the development of skills, knowledge, and organisational capabilities, while the exchange of experiences improved organisational performance on both sides of the border (Ravlić, Glavaš & Šimunić, 2020).

These findings support the argument that some of the most valuable effects of cross-border cooperation emerge through social and institutional processes rather than through direct economic or infrastructural outputs. However, because such outcomes are difficult to quantify and frequently become visible only over time, they remain insufficiently represented within conventional programme evaluation systems (Medeiros, 2015).

Evidence of long-term programme effects can also be observed through the sustainability of project activities. Research findings indicate that 78.4% of organisations continued implementing activities related to project results after project completion, suggesting that programme impacts frequently extend beyond the formal funding period and continue to generate value within local communities (Ravlić et al., 2020).

## **6. The Gap Between Measured Success and Actual Development**

The comparison between official programme indicators and beneficiary perceptions reveals an important discrepancy in the understanding of programme success. While evaluation frameworks predominantly focus on outputs and measurable achievements, beneficiaries frequently emphasise long-term and intangible effects associated with cooperation, learning, trust-building, and network development (Ravlić, 2019). This discrepancy does not imply that existing indicators are inappropriate or unnecessary. On the contrary, measurable indicators remain essential for programme management, monitoring, and accountability. However, the findings suggest that they capture only part of the broader developmental reality generated through cross-border cooperation.

Pámer (2021) argues that spatial concentration alone cannot explain the quality of cooperation, the sustainability of partnerships, or the extent to which projects contribute to long-term territorial development.

The GIS analysis presented in *Figure 1* further illustrates the limitations of indicator-based evaluation approaches. Although spatial analysis clearly identifies territorial differences in the allocation of educational resources, it cannot determine whether these investments generated sustainable developmental outcomes. The map therefore highlights an important distinction between the visibility of programme inputs and the measurement of actual impacts. However, while GIS effectively demonstrates where interventions occur, it cannot independently explain the quality of cooperation, knowledge transfer, trust-building processes, or the sustainability of project outcomes. Consequently, spatial analysis should be considered a complementary rather than a standalone approach to evaluating the developmental impacts of cross-border cooperation programmes.

The findings therefore support the argument that development cannot be fully measured through administrative indicators alone. Cross-border cooperation programmes generate a combination of tangible and intangible effects, many of which emerge gradually and remain difficult to quantify. Social capital, institutional trust, knowledge transfer, cooperation culture, and network sustainability represent important dimensions of territorial development that frequently extend beyond the scope of conventional evaluation frameworks (Putnam, 1993; Medeiros, 2015). This observation is consistent with recent findings suggesting that the relationship between successful budget execution and actual developmental outcomes is often

assumed rather than empirically verified. As a result, high levels of financial absorption may indicate effective programme management, but do not necessarily demonstrate the existence of lasting social, economic, or territorial impacts (Montemayor Cejas & Esparza Masana, 2026).

Consequently, future evaluation approaches should move beyond a predominantly indicator-based understanding of programme success and adopt more integrated assessment models capable of combining quantitative indicators, qualitative evidence, beneficiary experiences, and territorial analysis. Such an approach would provide a more comprehensive understanding of the actual developmental impacts of cross-border cooperation programmes. The findings presented in this study are consistent with previous research highlighting the ongoing debate regarding the fundamental purpose of cross-border cooperation programmes. As Pámer (2021) argues, a key question is whether Interreg programmes should primarily address development disparities through financial support or focus on eliminating barriers and improving the effectiveness of cooperation processes. This distinction is particularly relevant when assessing programme impacts, as the concentration of funding and implemented activities does not necessarily correspond to the quality of cooperation or the achievement of long-term developmental outcomes.

Recent quantitative analyses of Interreg programmes have demonstrated a positive relationship between programme funding and the intensity of cross-border cooperation, particularly in terms of the number of partnerships and participating organisations (Bilczak, 2024). While such findings confirm the importance of financial resources for stimulating cooperation activities, they also highlight an important limitation of programme evaluation. Increased funding may contribute to a higher number of projects and cooperation networks, yet this does not automatically indicate stronger territorial cohesion, greater institutional capacity, or more sustainable developmental outcomes. Consequently, measuring programme activity should not be equated with measuring programme impact, reinforcing the need for more comprehensive approaches to evaluating cross-border cooperation.

## CONCLUSION

The question of whether development can be accurately measured remains one of the central challenges in the evaluation of cross-border cooperation programmes. Using the Hungary–Croatia INTERREG Programme as a case study, this paper examined the relationship between administratively measurable programme indicators and the broader developmental impacts experienced within border communities.

The analysis demonstrates that existing evaluation systems provide valuable information regarding programme implementation, financial absorption, project delivery, and the achievement of predefined objectives. Such indicators remain essential for programme management, accountability, and monitoring. However, the findings also suggest that they capture only part of the developmental reality generated through cross-border cooperation.

Evidence from previous empirical research conducted among programme beneficiaries indicates that many of the most significant programme outcomes are associated with knowledge acquisition, organisational learning, partnership development, network creation, and the sustainability of cooperation beyond project completion. These effects frequently emerge gradually, extend beyond the official duration of projects, and remain only partially visible within conventional monitoring frameworks. The paper further explored the potential contribution of Geographic Information Systems (GIS) to programme evaluation. While GIS provides valuable insights into the spatial distribution of programme interventions and territorial patterns of investment, the analysis confirms that spatial visualisation alone cannot determine the quality of cooperation, the effectiveness of knowledge transfer, or the existence of long-term developmental impacts. Consequently, GIS should be understood as a complementary analytical tool rather than as a direct measure of development. The findings support the argument that development cannot be fully assessed through administrative indicators alone. Although measurable outputs and financial indicators remain important components of programme evaluation, they should be complemented by approaches capable of capturing social capital formation, institutional trust, organisational learning, network sustainability, and other intangible dimensions of territorial development.

This does not imply that indicators should be abandoned. Rather, future evaluation frameworks should integrate quantitative measures with qualitative evidence, beneficiary perspectives, and territorial analysis in order to provide

a more comprehensive understanding of programme impacts. Such an approach would contribute to a more balanced assessment of cross-border cooperation and improve the capacity of evaluation systems to capture the complex realities of territorial development.

Future research should continue exploring methods for assessing long-term and intangible programme effects, particularly in relation to social capital, institutional resilience, knowledge transfer, and the sustainability of cooperation networks. As cross-border cooperation programmes increasingly address complex societal challenges, the ability to understand and evaluate their broader developmental contributions will become even more important for the future of European Territorial Cooperation.

Several limitations should be acknowledged. First, the study relies partly on secondary data sources and previously conducted research, which limits the possibility of establishing direct causal relationships between programme interventions and observed developmental outcomes. Second, many effects of cross-border cooperation emerge gradually and are influenced by external economic, social, institutional, and political factors that extend beyond the scope of individual programmes.

Finally, intangible outcomes such as trust, social capital, institutional learning, and knowledge transfer remain inherently difficult to quantify. Consequently, the findings should be interpreted as a contribution to the discussion on evaluation approaches rather than as a definitive measurement of programme impact.

The following section presents findings derived from the comparison of programme evaluation indicators and beneficiary perceptions of programme impacts. Particular attention is devoted to identifying differences between administratively measured programme success and the broader developmental effects experienced by programme beneficiaries.

## LITERATURE

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