

Sustainable Development in the Polish-Czech Cross Border Area - Indicators Analysis

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Abstract. The European Grouping of Territorial Cooperation NOVUM (EGTC NOVUM) was established in 2015 and conducts its activities in the Polish-Czech borderland. The main aim of NOVUM is to intensify, facilitate and promote Polish-Czech cross-border cooperation aimed at the strengthening of economic and social cohesion of the area of operation of the Grouping. Sustainable development is a widely accepted concept of development. Currently, striving for sustainable development is one of the biggest challenges. This concept is implemented at various levels of development from international, through national, regional to local. The article attempts to determine the degree of implementation of sustainable development in the area of operation of EGTC NOVUM. Indicators describing the social, economic and environmental situation have been chosen in order to achieve this objective. The analysis was carried out for the years 2014-2016. Among the indicators selected for analysis were, inter alia: gross domestic product per capita, expenditure on R&D, employment rate, unemployment rate, gross fertility rate, protected area.

Keywords: EGTC NOVUM, Sustainable Development, Indicators.

1 Introduction

The European Union has created the European grouping of territorial cooperation (EGTC) as a legal instrument to facilitate cross-border cooperation. EGTCs conduct their activities based on Regulation (EC) No 1082/2006 of the European Parliament and of the Council of 5 July 2006 on a European grouping of territorial cooperation (EGTC) [19], which allows for the creation of cooperation units by public entities from different Member States. In addition, it provides these entities with a Community legal framework. Thus, it can be generally written that European groupings of territorial cooperation are legal entities created by Member States, local and regional authorities and other entities governed by public law. Such an entity is of course created on the territory of the European Union and allows for the establishment of formal cooperation groups by public entities from different Member States.

It should be noted that the first EGTC, Eurométropole Lille-Kortrijk-Tournai, was created in January 2008. It enables cooperation between significantly different authorities from three different administrative levels in Belgium and France. The

official headquarters are in France and the French authorities have accepted the EC Regulation as a basic right, allowing them to employ staff in accordance with Belgian law [14].

The European Grouping of Territorial Cooperation NOVUM (EGTC NOVUM) was established in 2015. The Convention and Statute of the Grouping were signed in September of that year, while its legal personality was established in December. NOVUM operates in the Polish-Czech borderland. Its founders and members are institutions from the Czech Republic and Poland. There are five regional authorities: one from Poland – Dolnośląskie Voivodship (Region) and four from Czech Republic (Hradec Králové Region, Liberec Region, Olomouc Region and Pardubice Region), as well as two Polish-Czech Euroregions: Nysa and Glacensis. NOVUM was established in order to intensify, facilitate and promote Polish-Czech cross-border cooperation aimed at the strengthening of economic and social cohesion of the area of operation of the Grouping. NOVUM conducts its activities based on the Strategy of integrated cooperation of the Czech-Polish border 2014-2020. The main areas of activities are: economic cooperation, transport, environmental protection, health protection, spatial planning and administrative problems.

The literature emphasizes that the creation of EGTC NOVUM increases the economic attractiveness of the Polish-Czech borderland area and that this grouping, as a new subject of European Union law, advances the Polish-Czech cross-border cooperation in the implementation of the European Union's regional policy [1]. It is also pointed out that the Polish-Czech borderland has become a model example of the most innovative cross-border cooperation. The first Euroregions in Poland were created here, followed by the European Grouping of Territorial Cooperation (EGTC). For example, December 2016 marked the twentieth anniversary of the Polish-Czech Euroregion Glacensis. However, there is still untapped potential. Overcoming difficulties in contacts and effective implementation of new forms of cooperation may increase the chances for development of this region [17].

Sustainable development is a widely accepted concept of development. Currently, striving for sustainable development is one of the biggest challenges. This concept is implemented at various levels of development from international, through national, regional to local. Sustainable development is a concept that integrates various aspects. Research concerning the implementation of sustainable development takes into account the social, economic, environmental and institutional dimensions. The monitoring of this development concept is carried out using indicators that describe each of the areas included in sustainable development. Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. In its essence, sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations [20]. The subject literature lists three basic qualities of sustainable development, i.e. sustainability, durability and self-sustenance. T. Borys indicates that the concept of sustainable development refers to a process of changes which is characterized by an attribute of sustainability evaluated positively from the point of view of at least anthropocentric

system of values or – briefly, though less precisely – to development which has an attribute of sustainability [3, 11, 12]. At this point, it should be emphasized that despite many years of research and discussions, this concept has not received any clear and uniform definition. As a partial explanation of the emerging differences, one can point to an extensive and complex number of elements included in the concept of sustainable development. One of the most frequent inaccuracies and simplifications is reducing sustainable development to environmental or ecological aspects [16, 12].

The article attempts to determine the degree of implementation of sustainable development in the EGTC NOVUM area. In order to achieve this objective, indicators describing the social, economic and economic situation have been selected from generally available statistical sources for Dolnośląskie Voivodship, Hradec Králové Region, Liberec Region, Olomouc Region and Pardubice Region. The analysis was carried out in the years 2014-2016. Among the indicators selected for analysis were, inter alia: gross domestic product per capita, expenditure on R&D, employment rate, unemployment rate, gross fertility rate, protected areas. The analysis will show how the concept of sustainable development is implemented in the area of EGTC NOVUM. The spatial diversity of individual indicators and their changes in the analyzed period will be shown.

2 Research Methodology, Sustainable Development Indicators

Indicators represent quantity specific tools which synthesize or simplify the data crucial for the assessment of certain phenomena. These tools are useful in communicating, assessing and making decisions [13]. Indicators are the basic instruments used in the monitoring of sustainable development, since they present such a concept of development in a rational and measurable way [3]. Sustainable development indicators can be defined as a statistical measure that gives an indication on the sustainability of social, environmental and economic development [9].

The indicators used for the purposes of the conducted analyses allow for the analysis of progress in the implementation of sustainable development in the selected territorial units (regional level in this case), in accordance with the European Union's approach to the measurement of sustainable development. Sustainable development is a diverse phenomenon that integrates the economic, environmental and social dimensions. In order to conduct an analysis regarding the implementation of sustainable development, one should select the indicators describing each of these areas. The list of the selected indicators is presented in tab. 1.

Table 1. Sustainable development indicators chosen for EGTC NOVUM area.

No.	Indicator
1.	GDP per capita (EUR)
2.	General unemployment rate (%)

3. Infant mortality rate
 4. Population ages 65 and above (% of total)
 5. Life expectancy at birth, Males
 6. Life expectancy at birth, Females
 7. Percentage of households with Internet access
 8. Physicians per 1,000 population
 9. Registered criminal offences per 1,000 population
 10. Municipal waste per capita (kg)
 11. Share of population supplied with water from public water supply systems (%)
 12. Share of population living in houses connected to public sewerage systems (%)
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For each of these indicators, data for the years 2014-2016 were collected and subsequently analyzed. This made it possible to show the basic values characterizing the phenomenon of sustainable development in the EGTC NOVUM area. This is the first analysis for this area. The main difficulty was the selection of indicators for which comparable data would be available. The ability to present indicators at the regional level is always very limited due to the availability of data. However, it is very important to conduct this analysis. The establishment of EGTC NOVUM resulted in the creation of a joint cross-border Polish-Czech region of approximately 37.7 thousand km², which is inhabited by over 5 million people (Table 2).

Table 2. Population and area of EUWT NOVUM [4, 5, 6, 7, 8].

Region	Population (persons)	Area (km ²)
Dolnośląskie	2 930 710	19 947
Hradec Králové	550 804	4 759
Liberec	440 636	3 163
Olomouc	517 087	4 519
Pardubice	633 698	5 271
Total	5 072 935	37 659

Out of all of the inhabitants of the EGTC NOVUM area, 58% live in Poland, and 42% in the Czech Republic. The area on the Polish side constitutes almost 53% of the entire NOVUM area. Therefore, the EGTC forms an area of cooperation split roughly in half between the two countries, both in terms of population and area. Before the creation of NOVUM, the "large" Polish voivodship was cooperating with the relatively "small" Czech regions.

3 Results

The analysis included selected indicators for which comparable data for all regions could be obtained. The values of individual indicators in 2014-2016 are presented in tab. 3.

Table 3. Sustainable development indicators in the EGTC NOVUM members in the years 2014-2016 [4, 5, 6, 7, 8].

Region	2014	2015	2016
GDP per capita EUR			
Dolnośląskie	11,954	12,477	12,290
Hradec Králové	13,043	13,858	14,835
Liberec	11,539	12,356	13,032
Olomouc	11,571	12,271	12,828
Pardubice	12,097	12,993	13,330
General unemployment rate (%)			
Dolnośląskie	10,4	8,5	7,2
Hradec Králové	6,2	5,6	4,1
Liberec	6,5	5,5	4,4
Olomouc	7,7	5,9	3,7
Pardubice	6,4	4,6	3,7
Infant mortality rate			
Dolnośląskie	4,6	3,8	3,8
Hradec Králové	2,4	1,8	3,2
Liberec	2,5	2,1	2,6
Olomouc	4,5	2,9	2,5
Pardubice	2,2	1,9	1,8
Population ages 65 and above (% of total)			
Dolnośląskie	15,52	16,2	17
Hradec Králové	19	19,6	20,2
Liberec	17,6	18,3	18,9
Olomouc	18,2	18,7	19,3
Pardubice	18	18,5	19
Life expectancy at birth, Males			
Dolnośląskie	73,1	73,2	73,5
Hradec Králové	76,19	76,64	76,96
Liberec	75,09	75,67	76,15
Olomouc	74,5	74,95	74,43
Pardubice	76,08	76,35	76,41
Life expectancy at birth, Females			
Dolnośląskie	81,1	81	81,4
Hradec Králové	81,84	81,89	82,23
Liberec	81,47	81,45	81,82
Olomouc	81,38	81,02	81,55

Pardubice	81,61	82,06	82,38
Percentage of households with Internet access			
Dolnośląskie	68,4	72,2	72,9
Hradec Králové	71,5	73,8	75,4
Liberec	69,1	71,2	72,9
Olomouc	62,2	65,2	67,3
Pardubice	71,3	73,3	75
Physicians per 1,000 population			
Dolnośląskie	2,2	2,3	2,3
Hradec Králové	4,7	4,5	4,6
Liberec	3,9	4,0	3,9
Olomouc	4,8	4,8	4,8
Pardubice	4,1	3,9	4,0
Registered criminal offences per 1,000 population			
Dolnośląskie	21,1	20,0	19
Hradec Králové	18,5	15,6	13,2
Liberec	28,8	25,4	20,9
Olomouc	22,1	19,9	18,3
Pardubice	16,2	13,2	11,5
Municipal waste per capita (kg/per year)			
Dolnośląskie	324	340	361
Hradec Králové	272	295	304
Liberec	272	295	304
Olomouc	312	330	350
Pardubice	303	315	332
Share of population supplied with water from public water supply systems (%)			
Dolnośląskie	94,8	94,9	94,9
Hradec Králové	93,8	94,4	94,9
Liberec	91,8	92,7	92,7
Olomouc	90,5	91,4	91,8
Pardubice	97,3	97,6	97,5
Share of population living in houses connected to public sewerage systems (%)			
Dolnośląskie	75	75,7	76,3
Hradec Králové	77,1	78,1	78,5
Liberec	68,5	68,9	69
Olomouc	80,5	82,4	82,9
Pardubice	72,8	73,7	74,4

In each of the analyzed years, the Hradec Králové region had the highest GDP per capita. The lowest value in 2014 was recorded in the Liberec region, in the following year in Olomouc and in 2016 in Dolnośląskie. It should also be emphasized that the regions are slightly diversified in terms of this indicator. The coefficient of variation was 4,5% in 2014, 4,6% in 2015 and 6,5% in 2016.

The highest unemployment rate throughout the analyzed period occurred in Dolnośląskie. The lowest rate in 2014 was recorded in the Hradec Králové region, in 2015 in the Pardubice region, and in 2016 in the Olomouc and Pardubice regions. The regions are little different in terms of unemployment rate, but this variation is increasing. The coefficient of variation was 15,1% in 2014, 15,5% in 2015 and 18,3% in 2016.

The lowest infant mortality rate in 2014 and 2016 occurred in the Pardubice region, and in 2015 in the Hradec Králové region. The worst situation in each of the analyzed years was in Dolnośląskie. It is also worth emphasizing that the regions are moderately different in terms of this index and this diversification is diminishing each year. The coefficient of variation was 33,2% in 2014, 30,0% in 2015 and 24,3% in 2016.

The lowest share of population aged 65 and above (% of total) in each of the analyzed years occurred in Dolnośląskie, while the highest share was recorded in Hradec Králové. The regions are slightly different in terms of this indicator and the variation is getting smaller each year. The coefficient of variation was 6,6% in 2014, 6,1% in 2015 and 5,5% in 2016.

The shortest life expectancy at birth, both for women and men, occurred in the Dolnośląskie voivodship in each of the analyzed years. Life expectancy for men was the longest in the Hradec Králové region each year. For women, it was the longest in Hradec Králové in 2014 and in the Pardubice region in subsequent years. The regions show virtually no differentiation in terms of these indicators

The next indicator analyzed was the percentage of households with Internet access. The research conducted shows that this share has been increasing in each of the regions from year to year. The minimum value in each of the analyzed years was recorded in the Olomouc region, and the maximum in the Hradec Králové region. The coefficient of variation was 4,9% in 2014, 4,4% in 2015 and 4,0% in 2016.

The lowest number of physicians per 1,000 population in each of the years was recorded in Dolnośląskie region, and the highest in Olomouc region. It is worth noting that in the Czech regions the value of this indicator is almost twice as high as in the Polish region. Diversity in each of the analyzed years was on the average level. The coefficient of variation was 23,7% in 2014, 22,2% in 2015 and 22,4% in 2016.

The highest rate of registered criminal offenses per 1,000 population in each of the analyzed years occurred in the Liberec region and the lowest in the Pardubice region. A positive phenomenon is the diminishing value of this indicator for the period. The coefficient of variation was 20,0% in 2014, 22,3% in 2015 and 21,7% in 2016.

The largest amount of municipal waste per capita (kg) in each of the surveyed years was produced in the Dolnośląskie Voivodship, and the least in the Hradec Králové region. An unfavorable phenomenon is the year-by-year increase in the amount of waste generated. The coefficient of variation was 7,1% in 2014, 5,8% in 2015 and 7,1% in 2016.

The percentage of water supply systems (%) in the surveyed regions is at a high level exceeding 90%. The lowest was recorded in the Olomouc region, and the highest in the Pardubice region. The coefficient of variation was 2,5% in 2014, 2,2% in 2015 and 2,1% in 2016.

The share of population living in houses connected to public sewerage systems (%) was on a lower level. The highest value was recorded in the Olomouc region and the lowest in Liberec. The coefficient of variation was 5,4% in 2014, 5,9% in 2015 and 6,0% in 2016.

4 Results and Discussion

EGTC NOVUM is a grouping that has been functioning for less than 3 years. Its activity focuses on building partnerships between entities in the area of its operation. Nevertheless, sustainable development of the entire area seems to be an important issue. The attempt to analyze the implementation of the concept of sustainable development based on selected indicators showed some very important issues. First of all, the Czech and Polish regions are very similar to each other in terms of the majority of indexed indicators. Differentiation at a noticeable level can be noted in relation to the following indices: Infant mortality rate, physicians per 1,000 population and registered criminal offenses per 1,000 population. Another very important conclusion that can be formulated is the fact that positive changes can be observed for all indicators except municipal waste per capita. In the case of the stimulant, the value of the indicators increases, and in the case of the destimulant decreases. The analysed regions are very similar to each other. The creation of EGTC NOVUM will, however, contribute to strengthening the cooperation between them. It will be possible to implement common projects, which in turn may contribute to a more complete implementation of the idea of sustainable development. The projects currently being implemented concern all areas of sustainable development. There are projects concerning cooperation in the fields of economy and environmental protection, as well as social aspects. The effects of these projects will be visible in a few years. After this time, it will be also possible to estimate the impact of NOVUM on the implementation of the idea of sustainable development in the Czech-Polish borderland.

5 Conclusions

In conclusion, it should be stated that EGTC NOVUM is an important instrument of cross-border cooperation between Poland and the Czech Republic. Its activity has a significant impact on strengthening cooperation between entities in the area of its operation. This attempt at an analysis was the first to concern the scope of implementation of the concept of sustainable development. It was carried out based on available indicators for which comparable data could be obtained. This analysis has shown that it is necessary to carry out comprehensive quantitative research to determine the progress in implementing this development concept. The analysis also showed a very close resemblance between the Czech and Polish regions. It can therefore be pointed out that this area shows little diversity and that the regions are very similar in many aspects.

6 References

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