

THE EXAMINATION OF RESOURCES AS BASIS FOR SMART DEVELOPMENT IN THE REGIONS ALONG THE HUNGARIAN-SLOVAKIAN BORDER

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Abstract

Paper's objective(s): *The aim of this paper is to summarize the smart development concepts from the professional literature available and to discover the resources that are the most commonly used as a basis for such development strategies. The target regions are along the Hungarian-Slovakian border, since they are the least-developed regions and at the moment they are very far from the existing smart development concepts.*

Data/Methods: *In this paper we intend to use desk research, we intend to give an overview on the smart development concepts in Europe including the target countries. In order to do this, we will do document and literature analysis. In addition, we intend to collect statistical data to see the current economic and social condition of the target areas and intend to find out whether these regions have the required resources to apply any type of smart development strategy.*

Results/Conclusions: *The results can be very useful from regional and rural development point of view especially for the policy makers, since smart concepts are getting more and more popularity all over Europe, but such disadvantaged areas are far from being ready for such concepts, resulting even higher territorial differences. It would be necessary to define the minimum requirements and alternative ways for smart village strategies so that the rural areas could catch up with the more developed regions.*

Keywords: *Smart Cities, Smart Villages, Complex Development, Endogenous Resources*

JEL classification: *R10, R58*

1 Introduction

According to UNCTAD (2004), 'globally, creative industries are estimated to account for more than 7 per cent of the world's gross domestic product and are forecast to grow, on average, by 10 per cent a year'. To create an environment in which people and businesses can succeed, a stable macro-economic environment is an essential condition. Upon that foundation we can create the conditions for supply side success: high levels of education for people of all ages, first-class transport and telecommunications infrastructure, a favourable regulatory and tax framework.

Nowadays there are two processes going on in the world and of course in the European Union: more and more people tend to move to urban areas searching for better quality of life, jobs, more and better services, greener environment etc. while there are more and more underdeveloped regions losing their attractiveness for investments, having poor infrastructure, having ageing and underqualified population, providing low-quality services in limited quantity (Káposzta & Némédiné, 2017), thus getting gradually uninhabited. While in 2015, the urban population in the European Union was 72% of the total population, it is estimated that in 2050 this percentage will increase to 80%. On one hand, it can be considered a positive tendency and it establishes the emphasis on smart city concepts, on the other hand, it forecasts deep poverty and serious economic, social and environmental problems in the rural areas.

Since all the countries, including Hungary and Slovakia have to deal with these two processes parallel, apart from smart city concepts, smart village concepts must be also emphasized and tailored to the rural disadvantaged areas. In this paper we intended to see whether the regions along the border in Hungary and in Slovakia have similar resources and macro-indicators and whether they could be developed following similar integrated smart strategies. It is known that both countries have their own regional development strategies and national development plans, but in long terms harmonized strategies on both sides of the border could lead to sustainable economic and social development.

At the moment there are EU concepts for smart cities and smart villages existing, though the latter one is quite young. Smart Villages cannot be done in isolation and should be embedded in the wider development strategies for regions

and territories. Strengthening the links between rural and urban areas is key to achieving EU objectives. For many people, rural areas are simply home - a place to live, work and raise families. Rural communities need jobs, basic services, connectivity and smart transport solutions as well as a favourable climate for entrepreneurship. New types of business models need to emerge, such as portal-based services, and assist existing rural businesses to connect, integrate and cooperate better with urban based business. Location of economic activity is linked to the recognition of the 'geographical capital' and other possible comparative advantages for specialization or diversification. Intelligent logistics networks would allow villages to provide their products and services more efficiently on urban and global markets. EU rural areas are places of great assets and they can become even more attractive if local actors can unlock their potential.

Smart Villages cannot be done in isolation and should be embedded in the wider development strategies for regions and territories. Strengthening the links between rural and urban areas is key to achieving EU objectives. For many people, rural areas are simply home - a place to live, work and raise families. Rural communities need jobs, basic services, connectivity and smart transport solutions as well as a favourable climate for entrepreneurship. New types of business models need to emerge, such as portal-based services, and assist existing rural businesses to connect, integrate and cooperate better with urban based business. Location of economic activity is linked to the recognition of the 'geographical capital' and other possible comparative advantages for specialization or diversification. Intelligent logistics networks would allow villages to provide their products and services more efficiently on urban and global markets. EU rural areas are places of great assets and they can become even more attractive if local actors can unlock their potential. They provide indispensable contributions to solve many of the big societal challenges such as climate change or the sustainable provision of food, biomass and energy. Tourism and culture can stimulate employment and investment in rural areas. The most of this potential must be used and promote prosperity for the millions of rural citizens in the Union (https://ec.europa.eu/agriculture/sites/agriculture/files/rural-development-2014-2020/looking-ahead/rur-dev-small-villages_en.pdf).

Smart Villages is a relatively new concept within the realm of EU policy making. The emerging concept of Smart Villages refers to rural areas and communities which build on their existing strengths and assets as well as on developing new opportunities. In Smart Villages traditional and new networks and services are enhanced by means of digital, telecommunication technologies, innovations and the better use of knowledge, for the benefit of inhabitants and businesses. Digital technologies and innovations may support quality of life, higher standard

of living, public services for citizens, better use of resources, less impact on the environment, and new opportunities for rural value chains in terms of products and improved processes.

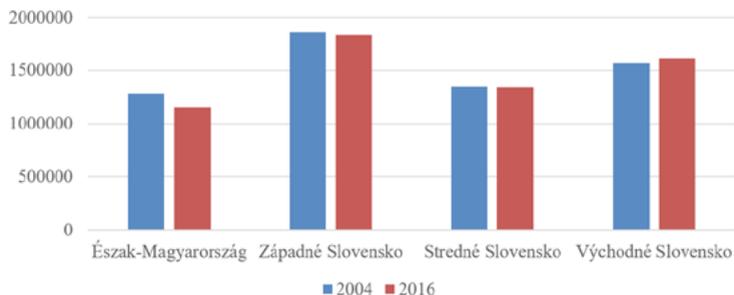
The concept of Smart Villages does not propose a one-size-fits-all solution. It is territorially sensitive, based on the needs and potentials of the respective territory and strategy-led, supported by new or existing territorial strategies. Technology is important as are investments in infrastructure, business development, human capital, capacity and community building. Good governance and citizens involvement is also key. A Smart Village would typically pay attention to e-literacy skills, access to e-health and other basic services, innovative solutions for environmental concerns, circular economy application to agricultural waste, promotion of local products supported by technology and ICT, implementing and taking full benefit of smart specialization agri-food projects, tourism and cultural activities, etc. The concept of Smart Villages covers human settlements in rural areas as well as the surrounding landscapes (https://ec.europa.eu/agriculture/sites/agriculture/files/rural-development-2014-2020/looking-ahead/rur-dev-small-villages_en.pdf).

2 Data and Methods

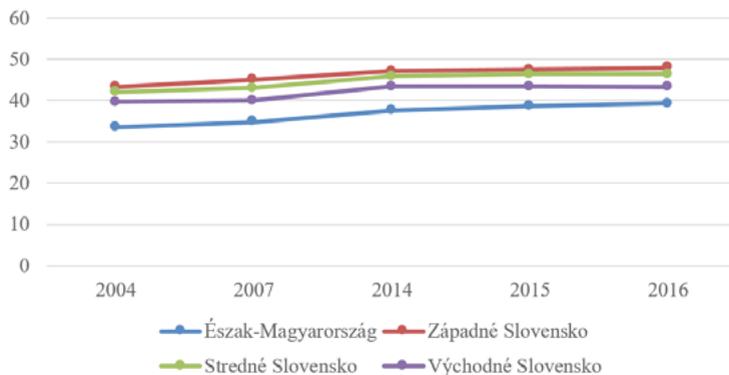
In order to see what are the economic and social conditions in the Hungarian and Slovakian regions, we collected macro-indicators for the years 2004 (the year of EU accession), the first year of multiannual programming periods (2007, 2013) as well as the most recent years (2015, 2016). We intended to see the tendencies in the most important economic, social, demographic, education and employment fields to find out whether these regions have the necessary resources for smart developments. The source of data is Eurostat. In the case of Hungary, we examined only Northern-Hungary (Észak-Magyarország), while in Slovakia we examined all the regions except for the capital region (Bratislava). To analyse and display the data we used Microsoft Excel program.

3 Results and Discussion

First of all, on Figure 1. we can see the change in population in the regions. It is important to mention that the size of the regions is not the same (regarding the population) but it should be clear how many people can be affected by the disadvantaged conditions along the border. As it can be seen on Figure 1, the greatest decrease in the population from 2004 by 2016 was in the Hungarian region (over 126.000 people) due to its handicapped economic and social situation (it will be proven by further tendencies).

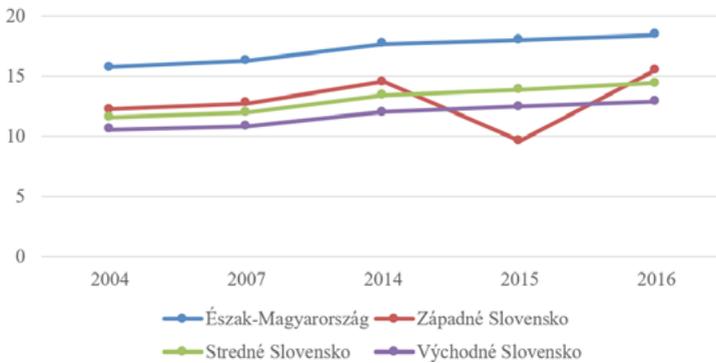
Figure 1 **The change in the population of the regions in number (2004-2016)**

Source: Eurostat, authors' own calculations, 2017.

Figure 2 **The share of population between 25-64 years (% , 2004-2016)**

Source: Eurostat, authors' own calculations, 2017.

Figure 2 also refers to the disadvantaged situation of Észak-Magyarország, since it has the lowest share of active population within the total population. It makes it more difficult to carry out developments that contribute to the GDP growth, because only a low percentage of the population can be the basis for such. The picture is even more disappointing for the policy-makers, if we take the elderly people (over 65 years) into consideration who are officially retired and not economically active any more. In general, the tendency is gradually increasing but in Észak-Magyarország it nearly reached 19%. It means that one in five is 65 or older and based on the social net. The most favourable conditions are in Východné Slovensko.

Figure 3 **The share of population with 65 years and over (% , 2004-2016)**

Source: Eurostat, authors' own calculations, 2017.

On Figure 4 the PPS per inhabitant is shown in the % of the EU average. It is important to see because it can reflect the economic power of a region and can be attractive for people thus encouraging them to move to the region.

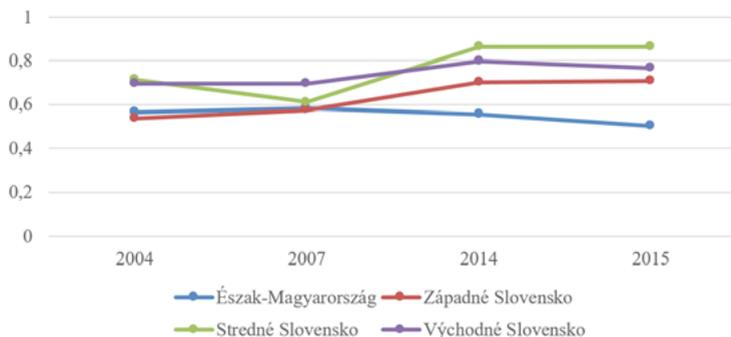
Figure 4 **Purchasing Power Standards per inhabitant in the % of EU average (2004-2015)**

Source: Eurostat, authors' own calculations, 2017.

Regarding the employment rate in the regions, we can see gradual increase in all the regions, however, only Západné Slovensko and Stredné Slovensko reach 70%. Going back to the smart concepts, it is not enough to see the employment rate but it is more important to see how many people work in jobs related to high tech or research and development fields. On Figure 5 we can see that the share

of R&D personnel and researchers (% of total employment). Two different tendencies can be observed. One is in Észak-Magyarország, where it is a decreasing tendency and the other is in Stredné Slovensko, where a significant increase could be realized.

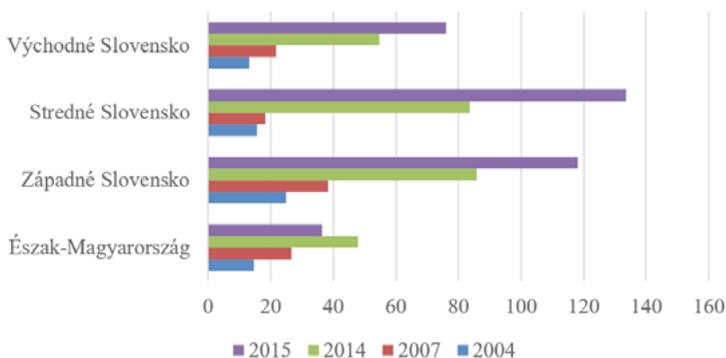
Figure 5 **The share of R&D personnel and researchers (% of total employment, 2004-2015)**



Source: Eurostat, authors' own calculations, 2017.

Moreover, we need to see the R&D expenditures whether they could provide basis for smart developments. On Figure 6 the abovementioned expenditure is displayed per inhabitant. The picture is quite disappointing for us as Hungarians, since we can see that our region has been lagging behind over the last 10 years, while the Slovakian regions showed spectacular increase in such amounts. The highest figure was over 133 EUR/inhabitant in Stredné Slovensko in 2016. However, it is very promising that the change from 2004 by 2015 was very significant in general.

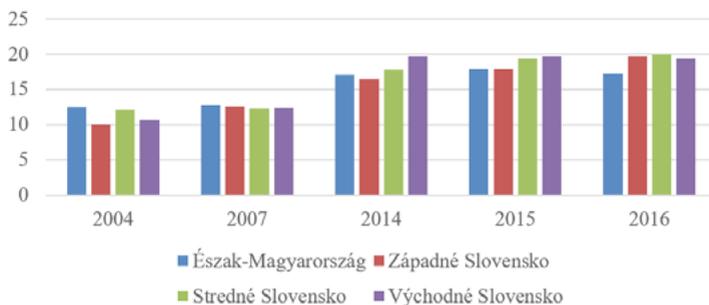
Figure 6 **Intramural R&D expenditure (GERD) by sectors of performance and NUTS 2 regions (EUR/inhabitant, 2004-2015)**



Source: Eurostat, authors' own calculations, 2017.

Based on the abovementioned we can state that there is still a lot to do for the governments and the enterprises when it comes to invest in R+D+I but their moderate activity can be understood if we consider the education level of the population. On Figure 7 and 8 we highlight the fact what share of the population has low or no education level or attained tertiary education. Both groups are important from the smart concept point of view, since people with very low education are not able to use the smart technologies even if they are planned so, and the latter group could be the solid basis for sustainable economic development. Unfortunately, Észak-Magyarország is in the poorest position in both regards. On Figure 7 it can be seen that all the regions developed their positions over the years but the Slovak regions did better, reaching or almost reaching 20%.

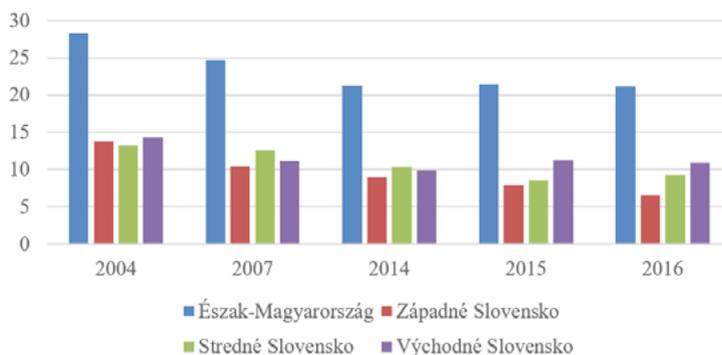
Figure 7 **The share of population with tertiary education (% of population between 25-64 years, 2004-2016)**



Source: Eurostat, authors' own calculations, 2017.

From smart city and smart village development aspects the abovementioned figures are very important, but as a challenge/problem, the high rate of people with poor or no education is far more important. To educate such people pose a huge burden on the economy and the society and needs those people's willingness as well – which is often an obstacle.

Figure 8 **Less than primary, primary or lower secondary education (% of population between 25-64 years, 2004-2016)**

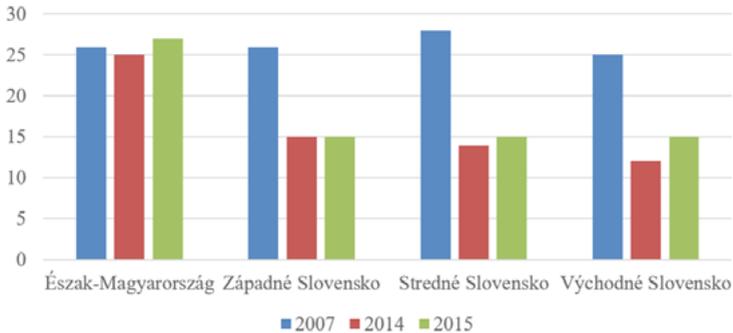


Source: Eurostat, authors' own calculations, 2017.

Figure 8 shows that in Észak-Magyarország – despite of the decreasing tendency – the rate is still high, around 20%, which is about double of the figure of the other regions. It is obvious that in order to decrease this rate significantly not the high cost is the most challenging but the attitude and family background

of people. Even if there are development funds available to educate people, it is not able to solve the problem, not to mention the time-demand of a significant improvement.

Figure 9 The share of those who have never used computer (% of population, 2007-2015)



Source: Eurostat, authors' own calculations, 2017.

Figure 9 shows only the data for years 2007, 2014 and 2015 because for other years statistics are not available in Eurostat. We need to take these figures into consideration when making efforts to adopt smart strategies in these regions, because the current strategies intend to build on developed ICT and the relevant knowledge and skills of the human resource. However, from these data we should see that there are serious obstacles in Észak-Magyarország, where over 25% of the population has never used computer, so their computer skills need to be developed as a first step. The current strategies take these skills as an already existing condition, so they want to focus on their advanced developments and not on their creation from the beginning. This fact clearly shows that the present smart strategies have to be modified and adapted to the disadvantaged rural conditions.

4 Conclusion

The abovementioned proves that there is a strong need for smart concept specifications for rural areas in the Central-European region. In our research we intended to call the attention to the fact that smart development strategies could be applied in the rural development, but in their present form they are not suitable to achieve the expected results. In our paper we chose the Hungarian-Slovakian border regions as target area, but of course to draw complex conclusions, other regions are recommended to be involved in the research. We have already started

this work and wish to collect those conditions and resources that are needed to carry our smart strategies and achieve economic and social development in the regions lagging behind. Urban areas are in more favourable situation, since they have qualified human resource that can be a good basis for smart technologies, but the problem can be observed in the rural areas where there is no required human resource who could be the end-users of smart technologies. It is known that investing in technologies is not the most challenging in such developments, since if there are development funds available, technologies can be easily bought. The problem seems to be rather with the human capacities which should be developed and it can only be carried out in long terms. At the moment, the gap is so huge between the regions in this regard that very tailored and specialized strategies are needed in each case.

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