

CONNECTION BETWEEN BROWNFIELDS AND THE LABOUR MARKET AT SUBREGIONAL LEVEL

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ABSTRACT - The regions in depression due to deindustrialisation – the old industrial regions – can be defined by common internal characteristics, characterised by brownfields springing into existence, dwindling human potential, labour market depression and secondary migrational push. The primary focus of the article is the rust belts appearing following deindustrialisation, brownfields and their complex revitalization, especially in terms of the labour market. The aim is to prove the correlation between brownfields and the labour market at subregional level in Hungary by analysing two regions characterised by negative deindustrialization, namely Észak-Magyarország and Dél-Dunántúl. Local Moran's I was used to analyze regional autocorrelation between brownfields and the labour market indicators. Furthermore, subregions smitten by industrial depression are discussed in detail. The study considers the following hypothesis: in Hungary, brownfields came into being following deindustrialisation, especially negative deindustrialisation, which influences the labour market at subregional level. It is also supposed that the failure of development is due to misconceived revitalization. Using my previous results, I set up a new model of revitalization, which, in my opinion, can be facilitated by utilizing a new development.

Keywords: brownfield, labour market, Hungary

THEORETICAL BACKGROUND

There is no unified consent in the international literature on which regions to group brownfields. Brownfields are industrial regions with low efficiency in utilisation, or are abandoned altogether. Inefficiently utilized or abandoned railway lines and vacated military areas belong to this category, too (Barta Gy., 2002). According to CLARINET (Contaminated Land Rehabilitation Network Technologies), a brownfield is a region which has previously been in use and is currently abandoned or is in little usage; has disclosed or supposed contamination problems; is mainly located in an urban setting; needs intervention in order to be efficiently reutilized (Ferber U., Grimski D. et al., 2002). The 2008-2011 COBRAMAN project, financed by the European Union, realizes the improvement of brownfields by cooperating with Slovenian, Czech, Polish, German and Italian institutions. The international literature is not unified in grouping brownfields into regions. In Germany, they concentrate on the rehabilitation and refurbishment of urban areas. In Italy, such areas are considered contaminated, where the physical, chemical and biological contaminants are present in a concentration higher than the accepted level. In Poland, these are called degraded areas due to diffuse soil contamination and a high density of landfill sites in urban areas. In Spain, the definition is the same as that of the unused industrial areas. In Romania, there is no official definition for brownfields, but mostly they refer to potentially contaminated sites and industrial ruins with this category. In Canada, these brownfields are contaminated, under-utilized and unproductive areas (Table 1). The lack of a unified database is the main problem in the research of brownfields. According to Oliver et al., in 2005, the two most affected countries were Poland and Romania. Further significant brownfields were located in the United Kingdom, the Czech Republic, Belgium and Germany.

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Table 1. *Different definitions of brownfield*

Institutes/ countries	Definition of brownfields
CLARINET	It is the place which has been used already, now abandoned, exploited or less; detected or suspected contamination problems struggling; mainly in urban areas
Germany	Non-used urban buildings. Urban areas that require complex development. Renewal of urban areas is emphasized
Italy	Contaminated sites with the physical, chemical and biological substance concentrations higher than the allowed level. The contamination is such that it is injurious to human health and threatens the natural and built environment
Spain	Disused industrial or contaminated sites
Romania	Contaminated sites involving problems
Ireland	Derelict land: areas in which the presence of pollutants reduces its value. Neglected and dilapidated condition of the area, the level of pollutant impacts on the surrounding areas
Canada	Contaminated, under-utilized, non-productive areas
USA	Hazardous substances or pollutants with properties with that hinder expansion, restoration, recycling
VÁTI - Hungary	Land disused or underused, generally in poor physical condition, environmentally polluted former industrial area, business area, or abandoned, disused barracks area

Source: own data processing based on information provided by CABERNET.ORG

According to the definition provided by VÁTI, a brownfield (or rust belt) is an unused or underutilized industrial site, agricultural area or abandoned or unused army base, usually in a state of physical decay and/or wrought with pollution².

According to György Enyedi's definition (2005, p. 126): "A brownfield is a microgeographic urban phenomenon, the regulation of which is the responsibility of urban politics. Not to be confused with a rustbelt, which refers to traditional heavy industrial (metallurgy, industrial machinery manufacturing) sites, so region-paced regional politics can interfere with their fate".

Here we must mention Wilson and Kelling's (1982) theory of broken windows. It refers to the concept that if the architectural environment deteriorates, it has a negative effect on the community population relations and their need for order. According to their theory, graffiti, the accumulation of solid waste, the deteriorated buildings that are in need of repair, dilapidated and uninhabited buildings, make the locals feel vulnerable and refuse to participate in the community to maintain order. In the absence of the adequate rehabilitation of the area, a downward spiral process begins, which encourages further migration, increases unemployment, and leads to the appearance of deviant behaviour. Without the involvement of the people actually living in the area, revitalization can become more difficult to obtain, and the process can stop easily. During the social transformation, it is worth to have a cost-benefit analysis and the focus needs to be on the participation of people.

According to my previous research, there are two deindustrialized regions in Hungary: Észak-Magyarország and Dél-Dunántúl. As regards the conceptualization of negative deindustrialization regions, it became clear that the change of internal endogen factors takes place first. On one part, the

² VÁTI 2003 – Technical foundation inviting entries for rehabilitating brownfields in the scopes of the EU Structural Funds (study in preparation). Supervisor: Ágnes Nagy

presence of non-revitalised brownfields can be such internal endogen factors. Thus, a detailed analysis was conducted on the brownfields arising after the industrial decline in the aforementioned areas. The following figures show the basic assumption of the current research, namely that if deindustrialization is followed by social and environmental degradation, the thus avoided revitalization has further negative effects on society.

In various literature (VÁTI, 2003, p. 19), it appears that there is no evincible connection between the presence of brownfields and unemployment rate. Furthermore, in the Hungarian literature, the type of connection between brownfields and the state of society³ was not explored, which, in my opinion, can be best characterized by labour market indicators. The current paper proves these conceptions wrong, which are especially cumbersome mistakes as in economic policies development plans are prepared based on such views. The view on which this paper is based on is to formulate a complex development policy, which integrates the goals of regional development, employment policy and industrial development in connection with the receding industry. By examining the labour market relevance of brownfields in the scope of regional and industrial development at local and subregional level, the aim is to analyze the necessity of these three policies joining forces. Hopefully, this research will contribute to setting these regions on the path of development.

THE EFFECT OF BROWNFIELDS ON THE LABOUR MARKET

The connection between the presence of brownfields and the state of the local labour market is emphasised. For my method, I chose to consider the definition of industrially depressed microregions.

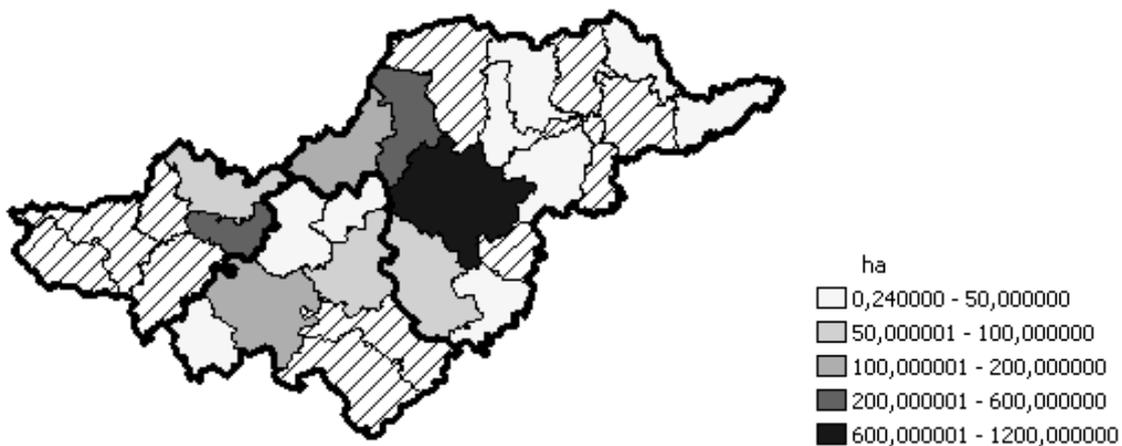


Figure 1. Extent of brownfields (ha) in Észak-Magyarország regions

Source: own data processing

It seems that this classification did not take the presence of brownfields and their significance in regional depression into consideration. In figures 1 and 2, the extent of brownfields is represented in the aforementioned Hungarian regions at the local level. In the scope of the North Hungary Operational Programme (Észak-Magyarországi Operatív Program – ÉMOP), 2,213 ha of brownfields were located in Észak-Magyarország in 2005, but Paulovics-Kőrösi (2011) assessed 3,286.5 ha in 2010. In the Dél-Dunántúl region, 1,970.6 ha of brownfields were located in 2006. In the 2003 study, VÁTI pointed out that Borsod-Abaúj-Zemplén county stands out both in the number of settlements affected by brownfields and in the size of industrial brownfields (VÁTI, 2003)⁴. The data provided by

³ The interest in the topic was picked together with Gábor Biczó and Zsuzsanna Dabasi Halász at the University of Miskolc in 2010.

⁴ No other research papers or further materials in connection with the national distribution of brownfields have been found besides the report of VÁTI in 2003. By all means, creating a new, comprehensive assessment would be practical.

the North Hungary Operational Programme (ÉMOP) and the South-Transdanubia Operational Programme (Dél-Dunántúl Operatív Program – DDOP) will be used in the following, as they are considered more realistic concerning, for example, the case of Miskolc, where ÉMOP found 1,169.25 ha, whereas VÁTI mentions only 235 ha⁵.

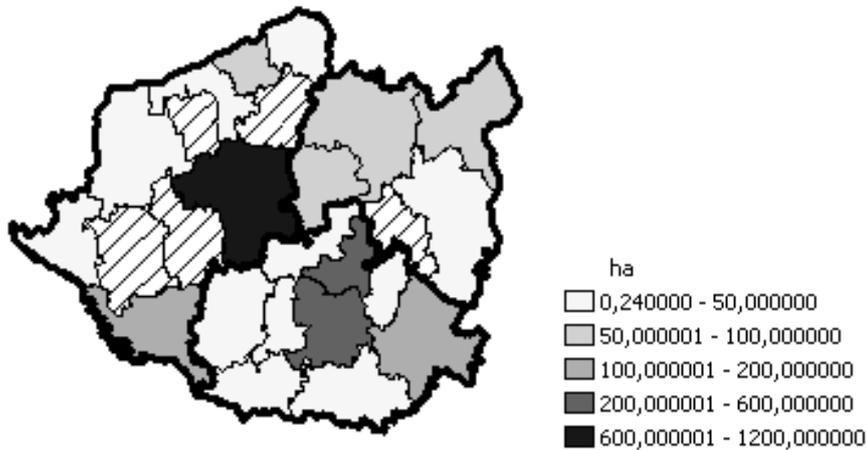


Figure 2. Extent of brownfields (ha) in Dél-Dunántúl regions
Source: own data processing

To support the above-mentioned hypothesis, the spatial autocorrelation index of Local Moran's I was examined for Észak-Magyarország and Dél-Dunántúl regions. It is important to take neighbourly relationships and their effects on the neighbouring regions into consideration when examining brownfields. A significant workforce commuted to the former industrial sites from the neighbouring areas⁶. Besides the neighbourhood matrix (tangentially adjacent areas included), the extent of brownfields was used instead of distance weights when calculating Local Moran's I. And this because I believe large brownfields have effect on settlements farther from the examined areas (Tóth, 2003) due to commuting to the industrial sites⁷. Regarding the territorial extent of brownfields, the results of the 2005 ÉMOP survey were used. The data about the unemployment rate was retrieved from the National Employment Service. In this case, only the data between 2002 and 2009 were available, but it was only the data between 2004 and 2008 that were used, as the effects of the economic recession were not yet visible in that period.

The following formula was used based on the calculations made by Local Moran's I:

$$I = \frac{\sum_{i=1}^N \sum_{j=1}^N (x_i - \bar{x})(x_j - \bar{x})D_{ij}}{\sum_{i=1}^N \sum_{j=1}^N D_{ij} \sum_{i=1}^N (x_i - \bar{x})^2}$$

Figure 3. Local Moran's I (Tóth, 2003)

⁵ VÁTI (2003) claims a 826 ha expanse in the Észak-Magyarország region, whereas ÉMOP mentions 2,275 ha.

⁶ For more than 40 years, industry had the most dominant demand on the labour force market in the counties of Észak-Magyarország region. With so many people employed, naturally the number of commuters to industrial centres (Miskolc, Ózd, Kazincbarcika) grew and favoured the parallel formation of industry-related settlements and colonies. An estimated 6,000 commuted only to the factory in Diósgyőr (Paládi-Kovács, 2007).

⁷ A weight matrix was used to define adjacent subregions in the case of the 28 subregions of Észak-Magyarország region, assigning zero to non-adjacent territories and one to the neighbouring ones.

where, D – adjacency matrix; X_i – labour market indicator (unemployment rate, participation rate, employment rate); X_j – brownfield.

The indicators are to be interpreted as the following:

$I > -1/N-1$, positive spatial autocorrelation,

$I = -1/N-1$, no spatial autocorrelation,

$I < -1/N-1$, negative spatial autocorrelation.

The calculations performed on 28 subregions of Észak-Magyarország region indicate a correlation of -0.03571 in this case. Based on the results of Local Moran's I listed in Table 2 we can conclude that there is a positive spatial autocorrelation between the extent of brownfield regions in a subregion and the unemployment rate, employment rate, and participation rate in that subregion both in 2004 and 2008. In the research periods, the autocorrelation of brownfields with unemployment rates and employment rates increased in the subregions of the Észak-Magyarország region, while the participation rate declined.

Table 2. Indicator number results from Local Moran's I in the microregions of Észak-Magyarország region

	2004		2008	
	Local Moran's I results in Észak-Magyarország	Local Moran's I results in Dél-Dunántúl	Local Moran's I results in Észak-Magyarország	Local Moran's I results in Dél-Dunántúl
Unemployment rate	0.537609	0.089120	0.583446	0.104971
Participation rate	0.665688	0.178088	0.411570	0.180042
Employment rate	0.684795	0.172712	0.785656	0.185485

Source: own data processing based on NES data

A similar technique was employed to define the neighbouring microregions in Dél-Dunántúl region. The DDOP data collected in 2005 was used to define the territorial expansion of brownfields. Similar to Észak-Magyarország region, there is a distinguishable connection between the location of brownfields and the labour market indicators. However, in this region the Local Moran's I numbers are significantly smaller in the examined period and the change rate is smaller, too.

The spatial correlation between the size of brownfields and the labour market indicators was demonstrated in the previous paragraphs. If we disregard the spatial connections and only analyze the correlation of labour market indicators and the expanse of brownfields at subregional level, a significant connection cannot be established. According to my calculations, there is a medium correlation between the size of brownfields and the number of permanently unemployed (correlation coefficient $r=0.4347$) in Észak-Magyarország (2009)⁸.

Therefore, those development programmes that rely on only one indicator group cannot be considered efficient. In the following part, the consequences this practice has on defining industrial depression sites in subregions are presented. The definition of industrially depressed sites can have a significant impact on the development of these subregions in the form of aids and the realization of development plans. Following the changes in the industrial infrastructure in Hungary due to the lack of resources and ill-considered industrial and political interventions, industrially depressed regions came into being. In 2001, legislators (based on Government Regulation 91 of 2001 [VI. 15.]) put six

⁸ In 2009, there is no appraisable connection between the size of brownfields and unemployment rate in the microregions of Észak-Magyarország. Between employment and inactivity rates, the correlation is low, too.

microregions into this category based on the following criteria:

- the number of persons employed in industry was more than two times the size of the national average in 1990,
- the number of people employed in industry declined between 1990 and 1999,
- unemployment was above the national average.

Concerning the regions in this regulation, four microregions were from Észak-Magyarország and one from Dél-Dunántúl and Közép-Dunántúl, respectively. In my opinion, the definition of industrially depressed subregions was cut too short by legislators with this limitation. In 2004, Ballabás and Volter expanded this group to 11 by including migrational differences (instead of unemployment) to the indicators. They identified six industrially depressed subregions in Észak-Magyarország, four in Közép-Dunántúl and one in Dél-Dunántúl. The subregion of Tiszaújváros was included in this group due to the definition given by Ballabás and Volter, although the rate of brownfields is extremely low and TVK and other process manufacturing companies settled in the industrial park still represent a remarkable labour demand. At the same time, it is necessary to increase the scope of the definition made in 2001, as Miskolc, for example, is not considered an industrially depressed microregion by the regulations. Upon establishing the aforementioned categories, they did not take the brownfields arising from the changes in the industrial infrastructure into consideration, the position of which is predominantly characteristic in Észak-Magyarország and Dél-Dunántúl.

In the following, the aim is to examine which subregions have been listed among the industrially depressed ones since 2004. The international literature on old industrial regions (OIR) uses regional GDP and labour market indicators to categorize. Regarding the number of people employed in industry, the data of the 2001 census are available. In my opinion, from the years following the 1990s, the 2001 data is relevant concerning what size the number of workers employed in industry shrunk to in a subregion. In spite of the fact that a lower number can go with a higher number of people employed in the tertiary sector, the ratio of people employed in industry can provide relevant information about the labour force of the subregion and the deindustrialization process. Regrettably, the next source of data at subregional level is the next census, and, in 2004, subregions were redrawn, making comparisons rather difficult. The inactivity rate was taken into account as a labour market indicator. The inclusion of this indicator is important as with the receding industry the former industrial skilled workers who could not find their place on the labour market could seek refuge in inactivity. A good example of this phenomenon is the subregion of Ózd, where despite the high number of workers employed in industry, high employment rates are long since not characteristic to the labour market of the subregion. Data concerning inland migrational differences between 2000 and 2011 were available. The ten-year span perfectly indicates how appealing a region is for employees, thus it was chosen to be included in the model. The ratio of brownfields above 90 ha in size was analyzed and they were compared to the size of the subregion. In both cases, results were near identical, which did not influence the final conclusion. In the case of individual indicators, they were compared to the regional levels and checked if the above average results were characteristic to the individual subregions.

The following indicators were studied at subregional level in the two regions:

- ratio of people employed in industry in 2001 (the Government regulations and Ballabás take the conditions in the 1990s into account, too, but nowadays, the following 10 years are relevant)
- ratio of inactive workers – instead of unemployment rate (2004)
- inland migrational margin – used by Ballabás between 2000 and 2011
- ratio of brownfields.

Thus, those subregions were included in the category where at least one above average (inactivity rate, inland migrational difference) or below average (number of industrial workers) rate was characteristic. Therefore, in my definition, those subregions are industrially depressed where the extent of brownfields exceeds the third of the regional average and there is at least one non-average

indicator. The findings are concluded in Table 3.

Table 3. *Industrially depressed subregions in Hungary in regions characterized by negative deindustrialization*

Extent of brownfields in the subregions of Észak-Magyarország and Dél-Dunántúl		Government regulation of 2001 (subregions)	Ballabás-Volter, 2004 (subregions)	Hegy-Kéri, 2014 (subregions)
Miskolc	1169.25 ha		Miskolc	Miskolc
Kazincbarcika	216.32 ha	Kazincbarcika	Kazincbarcika	Kazincbarcika
Bátonyterenye	211.72 ha	Bátonyterenye	Bátonyterenye	Bátonyterenye
Ózd	165.44 ha	Ózd	Ózd	Ózd
Salgótarján	96.68 ha	Salgótarján	Salgótarján	Salgótarján
Szerencs	27.28 ha			Szerencs
Tiszaújváros	0 ha		Tiszaújváros	
Pécs	297.50 ha			Pécs
Barcs	198.43 ha			Barcs
Dombóvár	96.76 ha			Dombóvár
Kaposvár	604.556 ha			Kaposvár
Bonyhád	1814 ha			Bonyhád
Komló	307.89 ha	Komló	Komló	Komló

Source: own data processing

Compared to the definition given by the Government Regulation of 2001 and by Ballabás and Volter (2006), I extended the group of industrially depressed regions with five subregions from Dél-Dunántúl: Pécs, Barcs, Dombóvár, Kaposvár, Bonyhád. As for Észak-Magyarország, compared to Ballabás and Volter (2006), Tiszaújváros was excluded from the group of industrially depressed territories but the subregions of Szerencs and Miskolc were included as opposed to the Government Regulation of 2001.

DIFFERENT DEVELOPMENT CONCEPTS OF THE BROWNFIELD SITES

The main reasons for brownfield development can be different targets according to the aim and local factors (Ionescu Heroiu et al., 2010):

- These areas in the city are located in places of strategic importance where demand occurs in new residential buildings, offices and commercial sites;
- The development of the affected areas by generating new revenues can contribute to local economic recovery;
- The development may help to decrease the area of deviant behaviours, thereby reinforcing social capital;
- Accelerated environmental purification process and elimination of the contamination source during remediation;
- They could be a suitable alternative to greenfield investments.

The advantages of the existing infrastructure (roads, railways, public transport, water supply, electricity supply, sewerage) are exploited.

According to the different concepts of each country, it can be determined what is expected of a brownfield development (Figure 4).

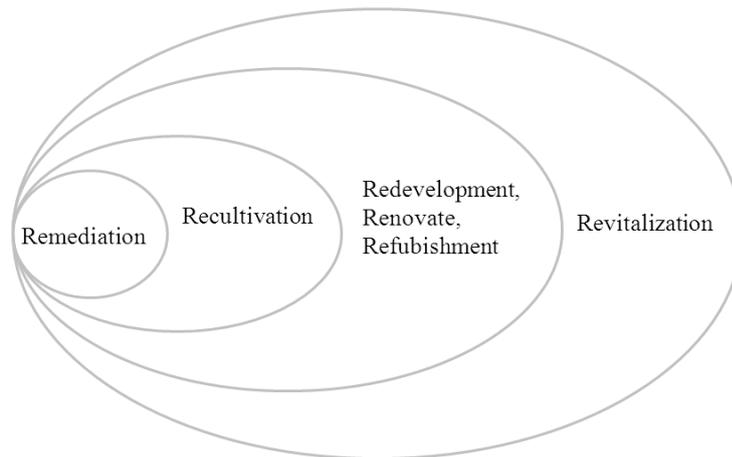


Figure 4. *The concept of revitalization*

Source: own representation based on Tóthné Szita Klára (2012)

We can talk about brownfield development on the basis of the development goal:

- remediation (*remediation*)
- environmental recovery (*recultivation*)
- environmental and economic recovery (*rehabilitation*)
- environmental, economic and social recovery (*revitalization*).

Revitalization must be interpreted as a complex concept, which, in addition to the environmental recovery functions, includes both finding new economic functions for the territory and increase the presence of the human resource in the labour market. The definition of revitalization, as I use and conceptualize it, treats the socio-economic, environmental and economic aspects as equal factors. I interpret brownfields as a threatening phenomenon to the normal community and social relations. The lack of the area's revitalization begins a downward spiral drawing process, which encourages further migration, increases the unemployment rate and leads to the emergence of deviant behaviours.

MODEL CREATION – BASED ON THE CASE STUDY AND ON THE EVALUATION OF ENVIRONMENTAL AND SOCIOLOGICAL FACTORS

The concept needs to be interpreted broadly and extended to social processes. In the immediate environment, in the labour market surroundings of the abandoned industrial sites, the process of social erosion begins. The changes in economic models, the patterns of modernization and the structural changes in the economy leads to erosion in the potentially high employment companies and it has an effect on the surrounding human capital as well. The decline in economic activity can be the result of the supply system and lower consumption. We included social capital in the model because in recent times, particularly economic studies showed that people's life satisfaction and the subjective sense of happiness are an important economic factor. In the area, where the greater part of human capital goes through a time of insecurity and unemployment at the same time, or in a short period of time, the individual's trust in society decreases. The results of unemployment both emotionally and financially, are projected into the economy, and the individual is questioning his belonging to any community and it makes their long-term visions questionable. However, for real happiness, which is rooted in human personality, it is essential to belong to a smaller and wider community. Psychologist Daniel Kahneman received his Nobel Prize for his economic research, and today is researching the effects of happiness on health and economic development. No solution was developed to handle this situation, there were no special socio-political or environmental policies and the problem was left untreated. The result: population and activities move out of the area, and the new population and its economic activities can be different and replace the former ones.

Another concept similar to *succession* is a word used in home sociology: *filtration*. It refers to the fact that the residents of homes are changing over time, poorer people move into the flats, while the former residents gradually move to bigger and better homes. As a result, in the brownfield environment a special circular migration occurs, which leads to less prepared human capital. First, the educated population migrates out, then the social situation significantly deteriorates for the people who stay, and it leads to the decrease of human potential. Due to the exchange, the human capital is further reduced. We extend the concept to the economic dimensions of the current area, in this case, to the contaminated, abandoned brownfields, around which the slums are developed. As result of these findings, from the 1970s and the 1980s a number of Western-European and US cities spent serious public money on the restoration of these rundown areas and their revitalization. In Doick et al.'s study (2009), scientists show through UK case studies the characteristics of brownfield investments and introduce a logical model that can help measure the success of revitalization. In our model below (Figure 5), we placed greater emphasis on human resource revitalization. I believe it is not a necessary feature of the environmental rehabilitation of an industrial site. If there is not enough emphasis on social factors, it will affect the operations in new industrial structures and it can result in the lack of investors. Bielecka and Król-Korczak's (2010) model introduces the importance of the creation of social places and their utilization. By contrast, in our model I believe that these social places are given, during the decades of working existence of the industrial sites the social places were there and helped social cohesion and the development of social connections. These factors did not change (maybe they amortized) and are present in the area under study.

In the beginning of the 21st century, after the change of the political system, the economic crisis stopped the process of environmental recultivation. The number of areas that were taken out of the industrial production increased. The planned brownfield investments failed. After the decline of industrial production in brownfields, pollution that was caused by the former operation of plants has stopped or significantly reduced. Problems of the environment are not primarily caused by new activities, but the new functions of the area can cause pressure. A much more serious problem is the legacy of environmental damage, including soil contamination - the biggest problem, both environmentally and in urban development. The bad reputation can remain even after the elimination of the environmental damages; action is needed to rehabilitate the area and to provide all aspects of proper recycling possibilities. Remediation, rehabilitation must always include not only the physical revitalization of the area, but also the revitalization of the locals who live there. The changes in spatial structures can hinder the possibility of complex treatment, and reduce the decision maker's power in the brownfield areas. These types of changes are expected to continue such as the 'split up buying' of areas especially where these changes have already started. Thus, in Észak-Magyarország region, the privately owned brownfields exceed 58%. Revitalization is defined as "rebirth", "resuscitation". The concept is extended to social and environmental perspectives relating to a certain industrial area agglomeration and its reuse. On the one hand, revitalization is interpreted in a complex way, namely the restoration of the environment, finding new economic functions, and the increased presence of human capital in the employment market. Revitalization is supported by spatial location, being rooted in the urban structure, and accessibility. In addition, the aim of these changes is to allow investors and policy makers to reconcile their long-term interests in utilizing the area. The creation of a more attractive economic and architectural environment, the increase of employment, and the increased production can lead to a growing revival and revitalization of the area.

In connection with revitalization, inclusion of the local population and their motivation is emphasized by Bielecka and Król-Korczak (2010). During their static tests, related to the revitalization of "rust belts", the following indicators were identified. They analyzed the factors in five groups. Social integration and the closeness of buildings were connected to spatial factors of the area and separated from social factors. The environmental factors were separated from the hydro-geological factors and technical factors. Prior to the cost-benefit analyses, a quantitative survey is needed. It will support the decision-making, and provide the factors on a financial basis. The rehabilitation of the polluted areas, the future usage of the area, and the goal of the rehabilitation can all differ in each decision-making alternative. During the revitalization process, it is necessary to take into account all

the direct costs, which are paid towards the social benefits of the locals, such as the state funded health care costs. Alternative costs can be the following: loss of personal income tax revenue, VAT that is not spent, corporation taxes of companies that did not move to the area. Indirect costs are difficult to calculate, but can be such as negative reputation, which deters investors, negative bias towards the city, crime, higher education costs of migrants. The resulting benefits of revitalization are increase in GDP, increase of personal income taxes after remigration, consumption, corporate taxes of newly settled companies. Further advantages are attractive landscape culture, structure, competitive human resources, and long-term operation of new companies, which can lean on the already existing industrial culture.

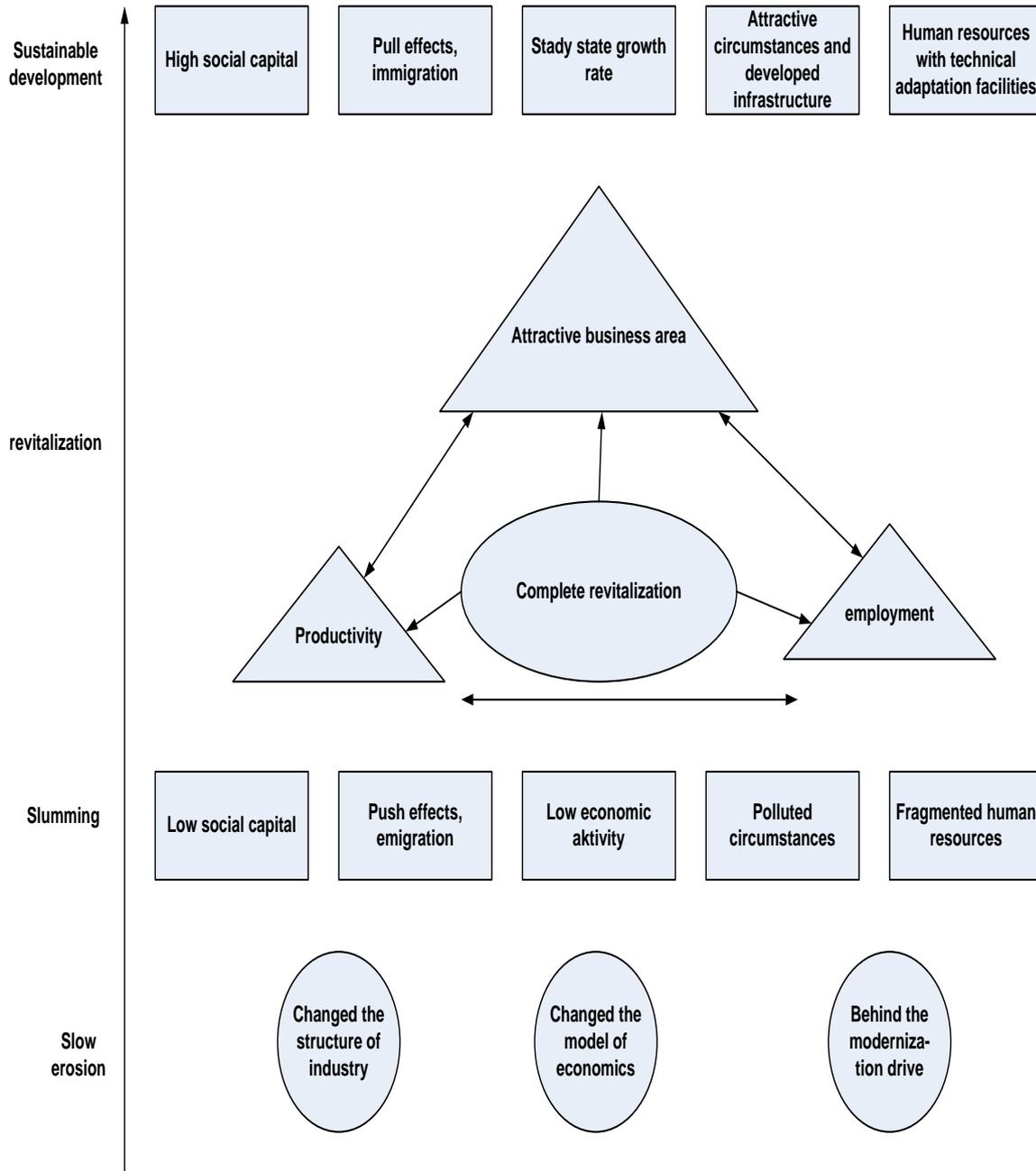


Figure 5. *Economic-social model of revitalization*
Source: own representation

CONCLUSION

At subregional level, there is evincible autocorrelation between the size of brownfields and the state of the labour market in Észak-Magyarország and Dél-Dunántúl regions. In conclusion, it is important to incorporate the size of brownfields into the definition of industrially depressed territories. Despite the fact that literature continually emphasizes the importance of brownfield investments, in practice they do not take the socio-cultural dimension of the revitalization into consideration. In my opinion, rehabilitation requires an interdisciplinary approach: before starting the development of the affected territories it is essential to examine the environmental, economic and social aspects of the brownfield areas and to model these processes from a scientific point of view, including the three pillars of sustainability. The complex evaluation of these underused territories could give important information for regional development, especially in the regions where industrial territories have high potential in human resource, but have lost their function that caused permanent decline of economic performance. Due to the structure change in industry, perpetual job terminations and the steady decline of industrial produce assisted by inflation have led to the emergence of a depressed area, and the economic crisis has only worsened its situation. Targeted interventions that take the ratio of the steadily unemployed and the rate of migration into consideration are needed to revitalize and set the depressed areas on a new growth path.

ACKNOWLEDGEMENT

This research was realized in the scope of TÁMOP 4.2.4. A/2-11-1-2012-0001 “National Excellence Program – Elaborating and operating an inland student and researcher personal support system convergence program”. The project was subsidized by the European Union and co-financed by the European Social Fund.

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